

# Healing The Fractured

by Emma Newman

This resource is based on the [Inventive podcast](#). The podcast mixes engineering fact with fiction. Each podcast features an interview with an engineer. That interview was used as inspiration by a variety of authors and poets to create a piece of fiction.



## Emma Newman

Emma Newman is a science fiction and fantasy writer, podcaster and audiobook narrator.

She uses an interview with a Manufacturing Engineer, Greg Bowie, to write about a dystopian future in which the trauma plates Greg creates provide hope for those fighting tyranny.

**Your Name:**

**Class:**

**Teacher:**

# 1. Meet the Engineer

## Greg Bowie

### Manufacturing engineer

*"I have always had a curious mind."*

Greg started his career at age 16 by doing an apprenticeship in a tool moulding company. He didn't want to take an academic university route into work, and wanted to do things with his hands to help him learn.

Greg is now a manufacturing engineer who makes trauma plates. These are small plates that are inserted into human bodies to support a broken bone as it is healing. Traditionally, metals have been used to make trauma plates. Greg is using carbon fibre plates. This means that it is easier for doctors to X-rays to see how the broken bone is healing.



*If I was to have a superpower it would be "time travel to be able to see the great engineers and inventors."*

Greg explains that "society has a hierarchy around engineering" and that the belief still exists that a university route is the "gold standard". However, Greg argues that engineering needs more people without degrees.

When asked for a quotation that inspired him, Greg chose a quote from Barrack Obama, "You can't let your failures define you, you have to let your failures teach you". Greg explains that this is the essence of engineering, you learn and develop by making mistakes.

Emma Newman takes inspiration from Greg's work designing Trauma plates and uses them as a key part of her story "Healing the fractured".



[nustem.uk/inventive/#greg](https://nustem.uk/inventive/#greg)

### Healing the fractured

When we read a story, we make inferences about the text.

Inference means to look at the evidence we have and make a prediction.

Look at the title of the story. We will make some predictions about the text based on the title.

Think about:

- What does the name suggest?
- What do we know about Greg? How does this effect your first impressions about the story?
- What do you think is being healed? What do you think is fractured?
- What questions do you have?
- What do you think the story is going to be about?

#### Vocabulary check

##### Healing

*noun:*

the process of making or becoming sound or healthy again.

“the gift of healing”

*adjective:*

tending to heal; therapeutic

“a healing experience”

##### Fractured

*adjective:*

(of a bone or hard object) broken; cracked

“a fractured skull”

(or an organisation or other abstract thing) split or broken; unable to function or exist

“refugees from fractured communities”

(of speech or a language) faltering and contains mistakes

“they’d misinterpreted his fractured Dutch”

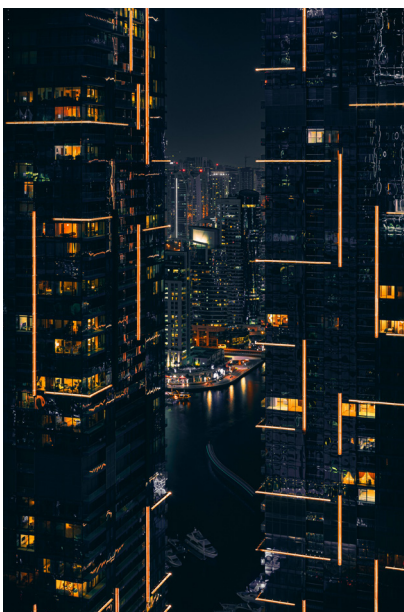


### 3. Activity: Dystopian Fiction

Before we have a look at the meaning of the word 'dystopia' we are going to look at some images which are commonly associated with it.

Look at the images, and on the sheet add:

- Any adjectives you can think that describe the images.
- Your ideas about the mood of the images.
- Can you describe what you can see?
- How do the pictures make you feel?



### 3. Activity: Dystopian Fiction continued

## Dys / topia

The prefix 'dys' means bad or difficult

The suffix 'topia' means place or location

The word '**dystopia**' is a noun which refers to an imagined state or society in which there is great suffering or injustice, typically one that is under extreme control or has suffered a terrible disaster.

The opposite to Dystopia is Utopia, where everything is perfect.

Authors such as George Orwell (Animal Farm), Suzanne Collins (Hunger Games) and William Golding (Lord of the Flies) all write of a dystopian world and all the difficulties that come with this.

Dystopian fiction has three main aims:

- It criticises real aspects of current society and it acts as a warning to the reader about social and political structures.
- It teaches about the danger of technology.
- It can tell the reader about the author's beliefs

Key features of a dystopian text	
<b>Setting</b> Set in an imaged future Environmental or human disaster Breakdown of society People under control, or freedoms taken away	<b>Plot</b> Citizens are constantly watched or spied on Rule-breakers are severely punished or killed Technological control Individualism is lost due to government control Citizens struggle for survival
<b>Dystopian hero (protagonist)</b> Usually rebels against controlling powers Brave and courageous Questions society's rules	<b>Dystopian villain (antagonist)</b> Dictatorship, tyrannical government or organisation Individuality is restricted or banned Uses censorship and propoganda to control society and citizens

### 3. Activity: Dystopian Fiction continued

Vocabulary check	
<p><b>Setting</b> Noun</p> <p>the place, or type of surroundings where something is positions, or where an event takes place.</p> <p>“a romatic house in a wonderful setting beside the River Wye”</p>	<p><b>Plot</b> Noun</p> <p>the main events of a play, novel or film etc devised and presented by the writer as an interrelated sequence.</p> <p>“the plot consists almost entirely of a woman finding her role in life”</p>
<p><b>Dystopian hero (protagonist)</b> Noun</p> <p>1. the leading character or one of the major characters in a play, novel or film etc.</p> <p>“the novel's main protagonist is an American intelligence officer”</p> <p>2. an advocate or champion of a particular cause or idea.</p> <p>“she's a strenuous protagonist of the new agricultural policy”</p>	<p><b>Dystopian villain (antagonist)</b> Noun</p> <p>a person who actively opposes or is hostile to someone or something; an adversary.</p> <p>“they turned to congront their antagonist”</p>

#### Check your understanding:

- Which of these sentenecs uses the word 'dystopia' correctly?
  - It was a really dystopia story.
  - The wedding was a total dystopia - everything was perfect.
  - The class studied a variety of dystopian texts.
- The antagonist is...
  - the villain in the story
  - brave and tries to rebel against the control of society.
  - often a dictator who tries to control society through censorship.
- Propadanda is...
  - fake news to mislead people.
  - positive stories in the press.
  - information to promote a political point.
- One aim of dystopian fiction is...
  - to warn about the dangers of technology.
  - to describe a utopian society,
  - to make people afraid of the future

# Healing the Fractured

## Emma Newman

He wasn't dead in a ditch, or slumped over the wheel of the car, surrounded by broken glass in a dark country lane.

They lived in one of the towns gobbled up by Manchester's **suburban sprawl**, for one thing. There were no dark country lanes for miles, and certainly none between their home and David's office. So Petra's imagination placed him slumped in a nook between huge dumpsters behind a fast food restaurant instead, as if it was some sort of murder mystery producer trying to come up with a dramatic scene to start a show and impress the lead writer.

Suburban sprawl:  
unrestricted growth of  
housing and development

She was tired of checking the phone for messages, tired of the **tedious** circling around the more **plausible** explanations for why her husband didn't come home last night. He probably wasn't answering his mobile because it had run out of charge and he hadn't noticed. He hadn't answered the office phone because he wore headphones when he worked and there was no one else there to prod him. That was all. She'd barely slept, knowing she had a stressful day ahead, and now it was time to get up.

Tedious: boring and tiring  
Plausible: believable,  
realistic

The shower helped her to feel more human and then the front door slammed as she was drying her hair and she could hear David crashing about in his usual clumsy manner downstairs. Relief flooded her, making all those fears from the small hours of the morning seem ridiculous. Then the hairdryer cut out and she swore. Flicking it on and off did nothing; it must have tripped a fuse.

David was coming up the stairs two at a time and then burst in with a small metal box under one arm. He rushed over to the smarthome hub on the chest of drawers and yanked its cable out of the socket. "Where's your phone?"

She took in the sweat on his forehead, his **pallor**. "Are you ok?"

Pallor: unhealthy and pale  
appearance



## 4. Activity: Text analysis continued

He spotted the phone on the bedside table, swept it up, took out the sim card and then dumped them, along with the hub, into the box. He put the box out on the landing, shut the bedroom door, checked the window was shut too and sat on the edge of bed.

“David? What's going on? Did you turn off the power?” He nodded but offered no explanation. “Where were you last night?”

“At work.”

“I was worried. Why — “

“Have you seen the news, Petra?”

“About the US **diplomat**? Yeah, I'm going to be printing a custom plate for him, got the email at half two this morning. It's a complex wrist fracture, the scan should be waiting for me when I get in.”

She loved her job. They'd been making trauma plates for years, but her refinements to the process enabled them to print custom plates in just a couple of hours.

Diplomat: person appointed by a government to represent their country abroad



## 4. Activity: Text analysis continued

### Healing the fractured

You've now read the opening of the story. It sets the scene and indicates what is to come. Fill in the boxes to identify phrases and information from the text which are key features of a dystopian text.

<b>Setting</b>	<b>Plot</b>
<b>Dystopian hero (protagonist)</b>	<b>Dystopian villain (antagonist)</b>

### Healing the fractured

Authors can create an atmosphere for their story in a few sentences. Reread the passage from the story below and then answer the questions. Give examples from the text to support your answers.

David was coming up the stairs two at a time and then burst in with a small metal box under one arm. He rushed over to the smarthome hub on the chest of drawers and yanked its cable out of the socket. “Where’s your phone?”

She took in the sweat on his forehead, his pallor. “Are you ok?” He spotted the phone on the bedside table, swept it up, took out the sim card and then dumped them, along with the hub, into the box. He put the box out on the landing, shut the bedroom door, checked the window was shut too and sat on the edge of bed.

“David? What’s going on? Did you turn off the power?” He nodded but offered no explanation. “Where were you last night?”

“At work.”

“I was worried. Why — ”

1. How do we know that David is worried?
2. How does the author, Emma Newman, create a sense of urgency in this passage?
3. A key aim of dystopian fiction is to tell the reader about the dangers of technology. How does the author start to introduce this aim to us?

## 5. Activity: Creating intrigue continued

### Healing the fractured

The formatted text below shows how the author is using phrases to build up the atmosphere of the story. You should have included these phrases in your answers.

*David was coming up the stairs two at a time* and then burst in with a small metal box under one arm. He **rushed** over to the smarthome hub on the chest of drawers and **yanked** its cable out of the socket. “Where’s your phone?”

She took in *the sweat on his forehead, his pallor*. “Are you ok?” He spotted the phone on the bedside table, **swept** it up, *took out the sim card and then dumped them,* along with the hub, into the box. He put the box out on the landing, shut the bedroom door, checked the window was shut too and sat on the edge of bed.

“David? What’s going on? *Did you turn off the power?*” He nodded but **offered no explanation**. “Where were you last night?”

“At work.”

“I was worried. Why — ”

1. How do we know that David is worried?

2. How does the author, Emma Newman, create a sense of urgency in this passage?

3. A key aim of dystopian fiction is to tell the reader about the dangers of technology. How does the author start to introduce this aim to us?

### Healing the fractured

*The story continues...*

They'd been making trauma plates for years, but her refinements to the process enabled them to print custom plates in just a couple of hours.

By the end of the day it would probably be screwed into the bone over the diplomat's fracture and she'd have the last bit of evidence she needed to argue for extra investment at the next funding round.

She put the dead hairdryer down and went to sit next to him. "What's going on? You look scared. Do you know something about the crash?" There'd been all sorts of speculation about someone hacking the car's computer, as collisions were so rare now. But David specialised in **encryption**, not car safety systems.

He twisted so he was facing her, looked into her eyes as he took her hands. He was trembling! "No, it's not that. I need you to do something for me." He swallowed, then reached inside his shirt pocket and took out a tiny plastic box, not much bigger than a SIM card. He held it between his thumb and forefinger so she could see it better. "I need you to put this in the plate you print for the diplomat. In one of the layers, during construction, so it's hidden. And I need you to not tell a soul about it."

She blinked and then half-laughed, as if somehow that would burst this horrible bubble of tension and bring them both back into some sort of normality. But he remained deadly serious. "What is it?"

"A computer chip. The box makes it look bigger than it is. I need to get it into the States and this is the only way I can do it."

Encryption: the way information is turned into a secret code



## 6. Activity: Inference continued

### Healing the fractured

What do we know about each of the characters so far?

Write down your thoughts in the grid below. Use evidence from the story to support your points.

Do you think David is the antagonist or protagonist?

Petra	David

*“A computer chip. The box makes it look bigger than it is. I need to get it into the States and this is the only way I can do it.” David*

What questions do you have at this point in the story?

What do you think will happen next?

### Healing the fractured

*The story continues...*

Now she was starting to feel nervous. "Okay... I need you to start making sense. You're freaking me out."

"I spent last night making this. Love... you know that I work in encryption... what you don't know is that I'm involved with a group of people who... no, you don't need to know that. Look, this box contains a chip that holds a public encryption key, the most powerful private encryption key I've ever made, and some software that basically lets the user piggyback off satellite comms. This, plugged into any decent motherboard, would let the user communicate with us, securely, from anywhere on the planet. I need you to help me smuggle it into the States, using the diplomat's trauma plate."

"Are you a spy?"

He laughed. "No, I'd be a crap spy, you know that."

She gave herself a couple of moments but it still didn't make sense. "But this sounds like... James Bond rubbish." Despite that, she couldn't stop herself from working out how she'd insert the chip between two of the layers of carbon fibres without **jeopardising** the structural integrity of the trauma plate. Perhaps if it was small enough, and not near to any of the screw holes where it would be attached to the bone...

"It's... **theoretically** possible, I suppose."

The technical feasibility didn't worry her, it was the fact it was for the US diplomat. And the accident had happened during the first UK visit by a representative of the neo-fascist America First party that had recently seized power. Was David part of some dodgy plot here?

Jeopardising: to put something in danger

Theoretically: related to an area of study, rather than practice

## 7. Activity: Research task continued

He misinterpreted her silence. "So you'll do it?"

She thought about the press attention the surgery was going to get, about how her boss had made a comment in the email about raising the profile of her work off the back of this case. Normally she'd be left to manage the printing of custom plates without anyone taking an interest, but this one? If she interrupted the print to insert something between the layers it would be obvious to anyone watching. Of course, if they got the press in – God forbid – she could always print the last wrist fracture plate she'd designed and substitute it for the real one once the circus had left.

But what if the press, or her boss, took an interest in the step before that, when she took the scan of the fracture and designed the plate for the print? She'd have to account for the size of the chip and some sort of protective casing and create a tiny cavity for it. Again, it was possible, but obvious to anyone looking. If she managed to stage something fake, she'd have to do that work after they'd gone and then doctor the file after the print to remove the evidence.

She felt the pressure of his gaze. "I didn't say I'd do it. There are so many flaws in this plan I can't even... Like, how do you know that it will reach the right person?"

"Petra, who's the leading complex fracture surgeon in Washington? The one most likely to remove the plate when the time comes?"

Her breath caught in her chest. "Janelle. Oh God. You're doing this to get the chip to her, aren't you? So she can talk to us!" Janelle was an old friend from university, one they'd known for years, a terrifyingly **competent** woman.

Competent: having the ability to do something.

## 7. Activity: Research task continued

America First had made **VPNs** illegal three months ago, effectively severing US citizens from anything not government approved, and chatting about politics with people in other countries was not something the **fascists** liked. The US now made China's internet **ensorship** look relaxed. Janelle was one of many friends in the states that they hadn't heard from in weeks. It was so hard to have hope these days.

"This chip will help Janelle talk to lots of people. As soon as she sees that fracture is being treated with one of your custom plates, she'll make sure she's the surgeon in charge of his care, which she'll be already, and she'll know what to do. We saw this coming, years ago, and we discussed using a chip like this to bypass censorship. We just thought we'd have more time."

"There are too many ways this can go wrong. What if Janelle doesn't guess what we've done?"

"Then it ends up in a bin and I try something else."

"Won't they pick it up in a scan? You know my plates are **radiolucent**."

"He won't go through the same level of airport security that everyone else does. And even if he does, security staff will know about the surgery and assume that it's part of the plate or something."

"A surgeon won't, and they'll check the x-rays to see how the bone is healing. If it's not Janelle, it'll be found out. They'd know it was me and they'd guess you gave me the chip. We'd be thrown in prison!"

VPN: Virtual private network. A method of protecting the identity or content of online communication

Facist: someone who supports fascism

Censorship: preventing the communication of art, images, media, and ideas

Radiolucent: transparent to X-rays



## 7. Activity: Research Task continued

### Censorship

Censorship limits people's access to information in different forms. It may be carried out by individuals, companies, organisations or governments.

Censorship takes place for many reasons. One reason is to protect vulnerable people such as children from being exposed to ideas that they are not mature enough to understand. For example, cinema films have an age rating and explicit lyrics in songs may be removed to create a 'radio edit'.

However, censorship may also be used to prevent people from protesting or finding out about bad things which are happening in their society. It is this meaning of censorship that the author is using in the story.

America First had made VPNs illegal three months ago, **effectively severing US citizens from anything not government approved**, and chatting about politics with people in other countries was not something the fascists liked. **The US now made China's internet censorship look relaxed.** Janelle was one of many friends in the states that they hadn't heard from in weeks. It was so hard to have hope these days.

#### Research task:

#### How does China use internet censorship?

Use scanning and skimming to find five key facts about the use of censorship in modern day China. Complete a paragraph to answer the question.

## Healing the Fractured

Emma Newman

*The story continues...*

"But it's the best chance we have, love. Janelle could organise some serious resistance with proper internet access. There's no way for her to get something this secure in the States without ending up on some watch list. And let's face it, she's gay, she's highly educated and spent a lot of time in the UK with people like us. She's probably on some list somewhere already."

"Yeah, and so it will be even worse for her if she's caught! She hasn't asked for this, is it right for us to put her at so much risk too?"

He looked at her as if she was being stupid. "Love, this is Janelle we're talking about. You know what she'd say if she heard you now."

She did. Janelle would be appalled.

David squeezed her hand. "I know it's scary, but we have to do something, not just watch the news and talk about how horrible it is. You always tell me I spend my life with my head in the clouds, that my work isn't practical, like yours is, well, this is as practical as it gets."

"But this is like... world war two resistance stuff, not our actual real life!"

"How many times have we talked about how angry we are? How powerless we feel?" he waved the tiny box at her. "This is power. This is something we can actually do."

"But I'm not some hero, I'm just a materials engineer!" She pulled away from him and went into the bathroom, feeling sick. What other secrets had he been keeping from her? Was he already in danger?

Her mouth was horribly dry so she brushed her teeth and then sat on the edge of the bath, knowing he was still in the bedroom and that she'd have to face him. But worse than that; she had to face herself. Was she really such a coward?

## 8. Activity: Organise and summarise continued

Her **pragmatic**, practical brain chewed over the many ways in which this **idealistic** scheme could go wrong. They hadn't even discussed how to protect the chip while being removed from the plate after the fracture had healed – although she'd had some ideas about that already – nor how to cover their tracks if the worst happened. She suspected there was no way to do that. Things were ugly in the UK too, with the right wing government given free rein to slash human rights protections after Brexit, how long was it before they lost the chance to even try this? And with the UK government still making friendly noises towards the new American regime, would they be **extradited**? The thought of being caught terrified her.

But what if it worked? The fight against fascism manifested in many forms, not just armies or internet memes or exhausted historians begging media outlets to stop repeating the same mistakes over and over again. It was the women who hid families in their basements and attics, it was the bureaucrats that issued visas to allow people to escape, it was the office clerks who chose not to stamp certain papers leading to death. Little people, playing little roles with big consequences. They must have been scared. And the risk to her was far less than it was to them.

She went back into the bedroom. David was still sitting on the bed, head in his hands, now looking defeated rather than stressed.

"I'm sorry," she said softly. "I'll do it. But what if someone else gets hold of the chip? How do we know that it'll be Janelle using it if we get a message?"

He smiled. "There's a single-shot password guess she has to get right for it to work, otherwise it's toast. It's the answer to a question: "Which rock is everything built upon?"

Both Janelle and David had called her their rock since university. It was what her name meant, derived from the original Greek. She was the one who was never late, who made sure everyone was okay and had what they needed, whether it was snacks for a road trip or a place to sleep to escape a toxic relationship. She smiled and took a deep breath, mustering her courage as she picked up the tiny box. "If I do get caught and sent to prison, and somehow you don't, you have to water my plants, okay?"

He laughed as he wrapped his arms around her. "Deal."

Pragmatic: solving problems in a sensible way; realistic

Idealistic: aiming for perfection; believing that good things can be achieved.

Extradited: hand someone accused of a crime over to the foreign state where the crime was committed.

## 8. Activity: Organise and summarise continued

### A. Key features of a dystopian text

Now that you have completed the story, go back to your key features sheet (pg 9). Use a different colour pen and add more information to the boxes.

### B. Themes of Healing the Fractured.

Before we started to read the story we looked at the key aims of a piece of dystopian text. They were:

- It criticises real aspects of current society and it acts as a warning to the reader about social and political structures.
- It teaches about the danger of technology.
- It can tell the reader about the author's beliefs

Think about Healing the Fractured. What are the themes, and how does it meet the aims of a piece of dystopian fiction.

Themes found in Healing the Fractured	How does this meet the aims of dystopian fiction?
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### C. Summarise

Now write a paragraph which answers the question:

**Is Healing the Fractured a dystopian text?**



## 9. Activity: What happens next?

Here is a checklist of features that are often included in a piece of dystopian fiction. Emma Newman has already used many of these in the story, *Healing the Fractured*.

- ✓ Set in an imagined future where there has been an environmental or humanitarian disaster.
- ✓ There has been a decline or breakdown of society.
- ✓ People are under control or freedoms taken away.
- ✓ Protagonist is brave and courageous who rebels against or questions society's rules
- ✓ Tyrannical government or corporation, often a dictatorship
- ✓ Individuality is severely restricted or banned.
- ✓ Propaganda or censorship is used.
- ✓ Citizens are constantly watched or spied on.
- ✓ Rule breakers are severely punished or killed.
- ✓ Acts as a warning to the reader.
- ✓ Teaches about the dangers of technology.

The end of the story leaves us not knowing what will happen to Petra, David and Janelle.

What do **you** think happens next?

Using the checklist, write the next paragraph of the story.

## 10. Activity: Essay question

Explain how the title of the story “Healing the Fractured” has a double meaning.