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Review by Elise Dixon

## *Grunt: A Science of Humans and War*

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Much like Mary Roach's previous works, *Grunt: A Curious Science of Humans and War* finds a way to tell the unfamiliar story of a familiar subject. In this case, *Grunt* is a book about the parts of military science not often relayed in the news or movies. Instead, Roach discusses topics like the frustrations caused by earplug use, whether diarrhea can interfere with a mission, how to reconstruct a penis when it (and its owner) has been critically injured by an Improvised Explosive Device (IED), the potential for stink bombs to promote peace, and how fast maggots can clean the wounds of the military's injured, among others. With hilarious wit, she meanders around the nooks and crannies of some of the military's most puzzling problems and imaginative solutions. In particular, Roach sets out to illuminate the unorthodox, creative problem-solving capabilities of the nation's finest, the kind of nonconformity that the military is not exactly known for; the kind that, in fact, keeps people alive.

This kind of exploration often leads Roach down unbeaten paths of inquiry; she describes herself not as "a spotlight operator," but rather as "the goober with a flashlight, stumbling into corners and crannies, not looking for anything specific but knowing when I've found it" (2016, p. 16). This methodology has allowed her to examine lesser-known tidbits of sexual history in *Bonk: The Curious Coupling of Science and Sex* (2009), the scientific strides made by studying the dead in *Stiff: The Curious Lives of Human Cadavers* (2004), the centuries-long attempt at understanding the hereafter in *Spook: Science Tackles the Afterlife* (2006), the sacrifices of space exploration in *Packing for Mars: The Curious Science of Life in the Void* (2011), and humanity's tenuous relationship with food in *Gulp:*

*Adventures on the Alimentary Canal* (2014). Roach has written magazine pieces for *Outside*, *National Geographic*, *New Scientist*, *Salon*, and *The New York Times*. Though she writes about science, she does not hold a science degree, to the benefit of her audience: likely those who are also not scientists, but are just as curious as Roach. She consistently finds a way to discover the complexities of her topics in simple terms, never condescending to her reader and always incorporating a punch line.

Roach opens *Grunt* with an introduction describing the military's development and use of a "chicken gun," fired at jets manned by simulated crew in order to test the jet's susceptibility to "birdstrike," a phenomenon occurring when birds fly into aircraft mid-journey, costing the military millions of dollars in damage every year. These are the kinds of problems and solutions Roach describes throughout her texts: the simultaneously silly and deadly serious scenarios that must be dealt with to keep people safe. *Grunt* seamlessly transitions from the first chapter to the fourteenth, moving first from the science behind military uniform fabric, to the measures developed to make military vehicles safer in a blast, to noise-prevention technologies and hearing-aids, genital transplants, combat medic training, heat exhaustion prevention, maggots and flies on the battlefield, stink bombs, shark repellent, submarine emergencies, the necessities and difficulties of getting enough sleep, and finally, to what doctors learn from the autopsies of the military's fallen. Each chapter explores what seems to be an inquiry that Roach either came up with out of sheer curiosity or found while looking up something else. To fully understand each question or line of inquiry, Roach travels across the country to multiple military bases, traverses the deep sea in a submarine, and volunteers for multiple training exercises and testing procedures. Furthermore, she interviews members of the Special Forces, sailors, marines, soldiers, and airmen of all ranks, a few three and four- star generals, as well as civilian contractors, doctors, and scientists. Roach's approach to these serious and outlandish topics is to sometimes go down rabbit holes of semi-related information, exploring, for instance, the fact that bears (well, *some* bears) are indeed attracted to a woman's

menstrual blood. Many of these asides are relegated to entertaining footnotes or make up some of the funniest one-liners, smacking always of her self-described clueless civilian status.

*Grunt* is not necessarily a book for those who want to learn more about the popular and oft-discussed topics of military science. Roach says herself in the introduction that she will not be talking about guns (besides those loaded with chickens) and, while a subject deserving of attention, she will neither be discussing post-traumatic stress disorder. Instead, like her other books where she provides insight into little-known, seemingly inconsequential tidbits of knowledge, Roach focuses each chapter of *Grunt* on uncovering the obscure curiosities of military science to a lay audience. This decision to describe different stink bomb scents in great detail over the chemistry of IEDs, or to spend a chapter on a maggot's ability to clean a soldier's wound instead of a chapter on prosthetics indicates a deliberate goal of talking around, through, above, and under the typical narratives surrounding the military. Instead of presenting a military science book that provides overtly technical language to an insider audience, hollow praises of heroic patriotism, or nationalistic celebrations of violence, Roach approaches the vast and politically fraught topic by examining issues on the American peripheral. Roach does not explicitly provide a larger picture of the military machine or even present a specific argument about the military's capability to solve unique problems. She does, however, provide multiple snapshots of the military's capacity for resourcefulness, discipline, patience, and humanity; and these snapshots crystalize into a kind of overarching picture of the system as a whole, a picture much more remarkable than those provided by Hollywood.

Ultimately, Roach's goal for this text appears to be to illuminate the military's creativity in addressing the kinds of problems about which civilians rarely hear anything. She is, she writes, most interested in "the quiet, esoteric battles with less considered adversaries: exhaustion, shock, bacteria, panic, ducks. Surprisingly, occasionally game-changing things happen when flights of unorthodox thinking collide with large, abiding research budgets" (p. 15). Essentially, this book is a testament to

individuality in a military culture of conformity—she celebrates the scientist who sticks with maggot research even though all the other doctors are grossed out, the doctor who discovers that skin inside the mouth works the best for building a new urethra (no hairs for urine to cling to), to the Special Forces man who admits to soiling himself in both Afghanistan and Iraq, to the scientist-mother / Army Ranger-son pair working to better understand how sweat regulates the body's temperature in hot climates, to the individuals who sign up to donate their bodies posthumously to become crash mannequins.

In highlighting the multiple individuals who work tirelessly to solve unsexy problems, *Grunt* paints a human picture of military life and trial, all while straying away from hollow nationalism or unproductive political criticism. Instead, in painting multiple individual portraits of the military, Roach is implicitly able to say much more about the hard and smart work of military members, and to provide some political critique without appearing to be an overbearing outsider. For instance, Roach muses, during her chapter on stink bombs, of the possibility for wars fought entirely with malodor, where the goal was to gross out the enemy, instead of kill them. Earlier, when discussing some military officials' reticence to employ cadavers as crash test dummies, she recalls that military officials do not have the same reticence when employing the living to drive similar vehicles into war. Even in these cases, Roach's criticisms are short, unassuming, and could very easily be missed. Yet, these gentle reminders are often perfectly placed among her more humorous ventures, all constant reminders of the true weight of war. It is likely not a coincidence that Roach's final chapter focuses on the doctors who perform autopsies on those who died serving the country— to finish with the gravely serious science of the dead is an honorable and realistic end to a mostly lighthearted take on the military. The few chapters before the finale set the tone, as Roach discusses the dangers of operating a nuclear missile on three hours of sleep, and details past cases of sailors who lost their lives at the bottom of the ocean in malfunctioning submarines. The punch lines cease in these final

chapters, marking Roach's choice to remind her readers that though this is a book about solutions made to keep people alive, success is not inevitable.

Still, like many of Roach's previous books, *Grunt* provides an array of stimulating information about the most uncommon aspects of her topic, complete with sidesplitting climaxes and witty asides. Roach's conversational style and self-deprecating humor provide a comfortable narrator, one who is non-judgmental about the reader's expertise on the subject. Further, because much of Roach's examinations focus on marginal subtopics, even those who know a great deal about military science are likely to learn something new, and are even more likely to enjoy a civilian take on the military world. *Grunt* is indeed a testament to the military's capacity for ingenuity, to Roach's perfectly timed punch lines, and to the celebration of quirky science.

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