6 #iambulletproof – A Layperson's Guide to Self-Enhancement

DIY patients have become a contemporary figure not just in the medical landscape but also in American culture more generally: They are the personification of individualized solutions and active participation in their health and healthcare. This chapter looks at new guides to self-enhancement that build upon the (literary) tradition of self-help books as well as discourses of individual responsibility for one's own wellbeing. It describes how traditional self-help or self-improvement tools today are reframed as 'hacks' that enable you to actively optimize yourself, thereby combining traditional tools with newer, biomedical, experimental ones. As I have elaborated on in Chapter 4, the traditional form of self-help – a collaborative effort based on open sharing of experiences, knowledge and information – has today been mostly supplanted by individualized and commercialized forms of self-help. These are aimed at (neoliberal) goal reaching and productivity, producing what McGee calls a "belabored self," constantly improving themselves in order to remain competitive in the market place and reach some sense of security (17). The guides under consideration here are part of this individualized, commercialized effort to promote self-directed modulations of the human body.

McGee and Dolby give different reasons for why self-help is (still) so popular today, with the former arguing that self-improvement has become an economic necessity and the latter claiming that self-help literature has become a part of personal education projects. Both approaches are visible here: For one, the practices under discussion in this chapter have a clear link towards optimizing the productivity of the individual, to give them an 'edge' over the competition – an ideal born out of the vulnerabilities experienced in day-to-day life after the last economic crisis. However, they are also part of larger 'education' efforts with the aim of making biotech developments more accessible, understandable, and actionable for the masses. As I will demonstrate, the authors and companies behind the case studies see themselves as translators of knowledge. This type of biological DIY and self-help can thus also be part of Dolby's personal, self-directed education processes that enable the reader to incorporate new knowledge, new ideas and values into their subjective worldview.

This is all the more interesting, as Dolby also argues, because such self-help books to a certain degree transport some of the values and basic propositions of a culture (xi). The writers, she argues, extract and re-insert an existing "American" worldview into their books, thus effectively "recycling" established values and ideas, giving them back to their readers, who then use them to affirm existing believes or insert new ones into their personal philosophies (1-2). The texts, therefore, can be seen as reflections of cultural concerns, contemporary material practices, hopes and values. Extending Dolby's argument, I argue that the self-help tools under discussion here perpetuate a view of biology and the human body that is already prevalent in American cultural ideas: a widespread belief in physical malleability, scientific solutions and individual transformation. Basically, the examples in this chapter are representatives of a new scientific and molecularized form of self-help that is spread not primarily via traditional media but through the channels of the Web (2.0).

As the examples in this chapter show, the five pathways in which "mutations" occurred that Nikolas Rose identified in *Politics of Life Itself* more than ten years ago – molecularization, optimization, subjectification, somatic expertise, and economies of vitality – are still very much present today. The physiology of the body is framed in molecular terms; interventions happen not necessarily in the name of health but to achieve an optimal state of being; humans are responsibilized, subjected to new somatic duties and expectations of health, fitness and productivity; new experts of the body advice and 'coach' individuals on their 'journeys,' leading to new "economies of vitality," new forms of extracting biovalue from the inherent human desire for (physical) perfection.[1] While some of those differ to some degree from Rose's original idea, their continued relevance serves to show that these tendencies are anything but new. Instead, they are taking new form, evolving along with the biotechnologies that make them possible. It is especially the latter two that have experienced new 'mutations' in the cases under consideration in this chapter.

The individuals behind those guides to self-modification consider themselves to be 'biohackers' or 'bodyhackers' in the sense that they are 'hacking' their own biology, their bodies, on a molecular level. DIY biology, thus, is here focused very much on the individual human body, biohacking understood as forms of self-directed physical maximization and modification. A lot of this work consists of charting its status quo through self-observation, experience and biomedical testing; finding 'individualized' solutions through self-experimentation; tracking results and thus enhancing your well-being and performance.[2] The do-it-yourself approach is evident to varying degrees in the two

1 Coaching is one of the outgrowths of the new role of (somatic) experts. During the past years coaching as a profession achieved a new eminence: life coaches, career coaches, health and fitness coaches – people seem to be looking for new forms of guidance in more and more areas of life. Part of this rise might be that more information makes it harder to discern what is right for an individual, scientifically proven or even just logically sound. In a world of uncertainty, people are looking for a new authority that validates their choices. While I do not want to disregard coaching per se, I do want to highlight that that is has become more and more prominent during the past years.

2 I am putting individualized in quotation marks here because the personalization of many of the suggested solutions in the guides remains questionable.

case studies. However, in both DIY is broadly understood as self-directed interventions: Even when biomedical 'professionals' are needed to perform the intervention, it is the self that is expected to make the decision. Moreover, here we find an amalgamation of practices that are also part of some of the following chapters, such as supplementation, testing, or tracking, combined with a playful, experimental mind-set.

For this chapter I have chosen to examine two case studies more closely: Guides to self-help in print and on the Web, more precisely, two guides self-published by their authors and distributed widely via *Amazon* and similar services – James Lee's *The Biohacking Manifesto* (2015) and Ari Meisel's *Intro to Biohacking* (2014) – and the body hacking brand *Bulletproof* founded by famous biohacker Dave Asprey. These guides offer knowledge and actionable recommendations, while emphasizing the need for personalized solutions – brought to you through their coaching.[3] An important theme in both case studies is science, or the belief in scientific solutions, as well as access to information. Lee, Meisel and Asprey continuously stress that their recommendations are based on scientific findings, thereby transferring the perceived authority of science onto their own arguments. However, the scientific basis they claim is not undisputed: For example, critics, also in the media, have argued that Asprey often cites studies with only a small research base, studies solely working on animal models, or that he ignores contradictory evidence and takes study results out of context (Belluz). It is important to note that my aim is not to proof or disproof their scientific basis, nor am I even particularly interested in that. Rather, I am looking at the discourses that are created and the assumptions they perpetuate and those revolve around scientism and knowledge, responsibility and active patienthood, plasticity and optimization, and the promise of a better, longer, healthier life.

Case Study I: "Be Smarter, Stronger, Happier" – Biohacking Manifestos in Print

Ari Meisel's *Intro to Biohacking: Be Smarter, Stronger, and Happier* (2014) and James Lee's *The Biohacking Manifesto: The Scientific Blueprint for a Long, Healthy and Happy Life Using Cutting Edge Anti-Aging and Neuroscience based Hacks* (2015) are two examples of guide- or advice-books now readily available for the consumer. Both were self-published by the authors and are available on platforms such as *Amazon.com*, where they rank among the first few suggestions when searching for "biohacking."[4] The books, as I will argue, are clear marketing tools for the services offered by the authors: individual coaching and consultations that provide more personalized solutions to health problems or fitness goals.

3 Both Lee and Meisel work as coaches/consultants and advertise their services in their guides, *Bulletproof* has its own "Human Potential Coach" training, that certifies "Bulletproof Coaches."

4 Other recent examples include: C. F. Smith et al.'s *Limitless Biohacking* (2017), whose subtitle "Gain an Unfair Advantage With Science-Backed Supplements Big Pharma Doesn't Want You to Know About…" points to similar discourses as those under discussion in this chapter. The main concern of the book are supplements that give you an edge, help you stay "in the zone" for a longer period of time, using "biohacking" as a systems-oriented approach to hack the biological machine that is the human body (cf. Foreword). "Health and fitness leader" Ben Greenfield's *Boundless: Upgrade Your Brain, Optimize Your Body & Defy Aging* (2020) promises a blueprint to bring optimization from the sphere of lore and science into everybody's reach.

They are meant to introduce the reader to what is possible and create a desire for personal transformation. Meisel's *Intro to Biohacking* is meant as an "introductory course" or seminar to biohacking, inspired by his own personal history of Crohn's Disease and his journey of improving his own medical condition (6-7).[5] His narrative and promise, as established in the first few pages, is one of "curing the incurable:" If he managed to cure his chronic health condition through health hacks, surely the reader will succeed in their own journey as well. The focus of his book is on individual goal achievement and the idea of "unlocking" your personal potential (Meisel 13). Meisel seems to be focused on less specialized (scientific) approaches and more on commonly available and used resources, such as apps and websites or forms of self-tracking. Lee is an avid self-publisher and author of various books on different health and biohacking topics. His *Biohacking Manifesto*, thus, in essence is comprised of three different books he had already published, now updated and combined. In the introduction he describes his book as a manual, a "comprehensive guidebook" (Lee n.p.), that however, due to its structure lacks an overarching theme or narrative focus. Instead, the three jumbled-together chapters look at anti-aging, the modulation of neurotransmission and brain hacks and nootropics, often repeating a lot of the same information.

What warrants closer inspection here is his title: *The Biohacking Manifesto*. It is this word choice that has puzzled me the most after reading through his very comprehensive manual. There are no real statements of political, social or even biological aims, purposes or policies. Rather, it is a collection of (scientific) information about biochemical pathways and systems laid out in a comprehensible manner and combined with suggestions as to how those pathways and systems can be modulated and optimized (Lee n.p.). Why then is he calling it a manifesto? It does not seem to be a manifesto in the traditional, publicly used sense, a political, policy-based one like Marx's *Communist Manifesto* or Meredith Patterson's *Biopunk Manifesto*. He also does not seem to intend it to be a manifesto people should live by. Even though he does include short tips and principles to observe, those are essentially old, common knowledge such as exercise, a healthy diet, socialization and meditation. The more advanced hacks he introduces, on the contrary, necessarily need to be individualized and experimented with (Lee, n.p.). They cannot be considered as generalized guidelines. Though slightly misleading, Lee's use of the word "manifesto" seems to be closer to the original Latin meaning of the verb *manifestare*: A means of revealing information, of making it visible, of making it public.

Can these types of books be considered self-help books in the classical sense? According to Dolby, self-help books are separated from other genres of popular literature through their content and function: Namely, that their content deals with some form of self-improvement, their style is informal and rhetorical, they follow a general problem/solution structure, and they have an educational function (37). For Lee and Meisel most of that applies: Their content, explicitly, deals with biological optimization and improvement; their styles are rather informal, colloquial, on par with the presumed reader;

5 One of the main selling points for his ideas, as he frames it, is his success of hacking his own body. Interestingly enough, the starting point for his experimentations with biohacking was a medical cause, a disease he wanted to find a personalized cure for – emphasizing the blurry lines between hacking for cure and hacking for enhancement.

they detail a (biological) problem and offer a solution – not just in the grander scheme of offering a solution to human fragility but also more narrowly by outlining specific biological problems which their tools help overcome – and their focus is educational, as I will elaborate on below. Both can therefore be seen as a continuation of the self-help tradition with biological, molecular, and neurochemical tools. Fittingly, do-it-yourself in their guide books often takes the form of self-education and self-improvement; the self if portrayed as responsible and accountable.[6] DIY becomes the favored route to success. Especially for Lee, this route includes self-experimentation as the best way to find solutions, or tools, that work for oneself.[7]

These tools, in both guides, are referred to as "hacks." Lee and Meisel position themselves in the tradition of *biohacking*, in that they hack their own biology. For Meisel, a "hack" is an "improvised solution" that is unconventional, surprising, "out of the ordinary," anything that "works for you." "With biohacking, we're essentially hacking our own bodies, creating unique…solutions for common health problems…." (5-6). The element of novelty and experimentation, that he puts so much emphasis on, is also visible in his construction of hacking as a "journey" (63), a process, a series of experiments. This process- and project-orientation perfectly aligns with broader ideas of DIY. More specifically, his suggestions of hacks include a mixture of basic techniques and more advanced ones such as: exercising regularly (practicing "the manmaker," interval training and yoga); getting enough sleep and improving sleep (through perfect timing, reduced exposure to blue-spectrum light, detoxification or lucid dreaming); eating self-cooked meals and super-foods such as healthy fats, coffee, avocados, wheatgrass powder, chia seeds, or spirulina or practicing intermittent fasting; supplementing krill oil, probiotics and Vitamin D (the universal three); improving productivity through optimization, automatization, and outsourcing; tracking the self in almost all aspects of

6 Meisel, for example, starts out his discussion with an element of intense personalization: "I am here to tell you that biohacking can create positive, dramatic, and sustainable change in *your* life. It starts with a first step. *Are you ready to make yours?*" (Meisel 8, my italics) This direct addressing of the reader emphasizes their accountability for their own life and the changes they want to make: They are the ones responsible for implementing them. His book lays open the tools they can use to reach their goals. These tools are chosen in a way that the individual biohacker-novice can use them themselves in a DIY attempt to modify their physical health and wellbeing.

7 A biohacker himself, Lee has done his share of self-experimentation with drugs and behavioral changes. He relates some of his experiences with "n=1" experimentation to the reader, and even though he cautions about their generalizability, self-experiments for him are a valid and valuable route.

life;[8] and leaving time for regeneration and rest through Contrast Hydrotherapy (hot and cold showers), wearing compression tights, or earthing.[9]

For Lee, biohacking is intrinsically connected to the human body as well. In his introduction he writes that biohacking is "just a fancy word for using science-based tools and shortcuts for optimizing your own biological potential" (n.p.). This optimization or maximization reaches from longevity and life extension, to memory and cognitive function, neurochemistry and psychological well-being, physical performance and physiological health (n.p.). Lee puts his focus on biochemical pathways and their modulation through drugs, (natural) supplements and behavioral changes, for example increasing serotonin, dopamine, noradrenaline, and endorphins to optimize the brain (the easiest "fix," he writes, is exercise). Still, also Lee includes many of the practices that Meisel mentions, such as yoga, supplements and drugs, diet and nutrition, sleep and meditation, social connection and quantification into his considerations. For example, for both of them physical exercise is a very "powerful" biohack to modulate your body not just physically but also chemically, according to Lee. Many of the hacks thus are not necessarily new techniques. Rather, they could be considered generalized advice, traditional wisdom or part of older practices of CAM.[10] The crux here is the linguistic *reframing* as a 'hack' meant to create a new cultural appeal. 'Hacking' implies novelty, experimentation, fun but also carries with it a notion of illegality, of individuals working against the system. These ideas upgrade old techniques for a new audience, make them seem technical and scientific – fitting for a society that favors technological solutions – and in some cases try to override stereotypical assumptions.[11] As 'hacks' they are integrated into the prevalent culture of active participation, making, mending and doing. But they also buy into the same old narratives of progress and biomedical advances, thus building upon age-old values and principles.

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8 What stands out is that Meisel seems to focus on data tracking and the quantified self. While this form of DIY biology is subject of the one of the next chapters, it is noteworthy that Meisel sees them as invaluable parts of a biohacking routine. He includes a whole chapter on tracking and the quantified self, in which he introduces techniques and tools to track aspects of daily life to optimize them, from productivity (Pomodoro technique) to health (insidetracker.com), ending in a long list of suggestions for apps and services (51-55). Data for him are a "pathway to self-discovery," which will show you potentials for improvement or unexplored health effects (63).

9 Through „earthing," according to Meisel, people aim at "reestablishing the lost connection to nature" through either walking barefoot or products like earthing bed sheets or mats (59).

10 As some of their biohacking suggestions already show, both Meisel and Lee pursue holistic approaches to wellbeing by considering mind, body, and spirit in their guides – another similarity with older CAM practices. For example, both argue for social connection and interaction as a means to heighten mental and thus physical wellbeing. In addition, Lee tries to bridge biomedical and natural approaches through focusing both on pharmaceutical drugs and natural supplements.

11 A good example is Meisel's introduction of yoga as a biohack. "Many people," he claims, "still balk at the idea of joining a yoga class. They may be embarrassed, uncomfortable, consider yoga too feminine or too new-age" (12). To override the spiritual and gendered associations with yoga in the Western world, he suggests downloading the *Yoga Studio* app on your phone so that you can perform your yoga routines in the comfort of your own home. It is time, says Meisel, to challenge the collective opinion of yoga. Yoga is only one of the examples of reframing in Meisel, who generally employs this technique more often than Lee.

The focus of their considerations, as we have seen, is the human body. All of their hacks somehow try to modulate and affect it. Despite their evocation of holistic ideas of wellbeing, their accounts perpetuate a classical metaphor of the body: that of a machine. Meisel writes: "It's helpful sometimes to think of the human body as the *most complex and sophisticated machine on the planet*. That's really all the body is: *a beautifully functioning, harmonious machine of interworking parts*." (Meisel 27, my italics) He continues this line of thinking by comparing food to fuel for that machine. As such, the human is responsible for maintaining and caring for that machine. Fitting to his more generalized focus, this machine metaphor remains rather abstract in his guide. Lee's manifesto has a keener focus on details, and thus it is no surprise that the broad-level machine metaphor is here supplemented with a very much reductionist, molecularized thinking: Lee aims at modifying neurotransmitters, precursor substances, free radicals, the smallest units of the body. Even when he suggests holistic approaches such as socialization, exercise, or behavioral therapy, the explanations for how they work to promote longevity, enhance moods or upgrade the brain are on a molecular level. The body becomes a system with complex pathways and causations, whose modification is strenuous but possible (Lee). This minute view of the bodily system is key to his approach to biohacking. It reflects his – and the biohacker's – commonplace understanding of the human body. Taken together, their accounts represent a mechanistic-systematic view of the body so prevalent in contemporary cultural discourses. Here, Lee and Meisel perpetuate a view of biology and the human body that is already part of American cultural ideas and assumptions.

Moreover, Lee's molecularized solutions all imply some form of modulation, a plasticity of the biochemical pathways under questions. As a consequence, I argue that a belief in biological plasticity, especially brain plasticity, is at the core of both their considerations. In his discussion of nootropics Lee writes:

> If we cast our minds back, we may remember that up until recently, scientists believed that the brain was fixed at birth and could not be altered in structure. However all that changed with the discovery of neurogenesis (the birth of new brain cells) and *neural (or neuro) plasticity*. Now we know that *you can change your brain* by repetitive behaviours …and by *selective modulation of particular brain systems*,… (n.p., my italics)

Much more simplified Meisel uses the metaphor of a muscle and a workout to explain the general idea of plasticity. "Working out" the brain like a muscle through brain training games can in his words increase cognitive function and performance (15-16). This type of neuroplasticity is made most obvious in discussions of the brain and brain modulation, but it can be extended also to other processes bodyhackers want to modify. What is necessarily implied is that these processes are open to change, can be modified by specific behaviors in order to be improved. The plasticity of the human body is one of the central premises on which their ideal of biohacking rests.

This assumption of plasticity is therefore also the basis for the very idea of self-improvement in their self-help books. Optimization is a core concern for both Meisel and Lee. Meisel introduces the aim of optimization already in the subtitle "*How to be Smarter, Stronger, and Happier*." Like the moderator of a quiz show or theatrical performance, Meisel introduces himself to the reader: "Welcome to the fascinating, ever changing, and always adapting world of biohacking. My name is Ari Meisel, and I've

created this study to help you harness the cooperative power of mind, body, and spirit in order to *generate a more fulfilling, healthier, and more productive life*." (5, my italics) From the beginning, the reader is promised that this book will help them to optimize their life. Afterwards the continued use of words like improve, improvement, and their lexical adaptations or superlatives of verbs serve to constantly remind the reader of this overarching theme. For example, the introduction to his discussion of productivity uses "improving" or "improve" six times on one page alone (Meisel 41). These lexical choices characterize Lee's manifesto as well. But more than that, his introduction, especially his definition of biohacking, starts off the book with a very clear promise: biohacking is meant to maximize, optimize, improve, or prevent. Sticking with this promise, his first part begins with a reference to the age old "obsession" with longevity, the basic desire to live as long as possible. It is this age-old desire that is turned into a promise in the first part of the book: a happy, productive, extended lifespan (Lee, n.p.). The general desire for – and cultural obsession with – a hacked, healthier or more efficient brain carries this promise over into the next two parts. This promise not only positions the human body as inherently deficient but also offers a solution to this lack: to use the tools of biotech to optimize the body.

Optimization for Lee means having a "competitive edge" over the general population. In his introduction he writes: "There is nothing in this book that will cure cancer or turn you into a superhero. What there is however, is a range of pharmacological and non-pharmacological tools to enable you to *get an edge over the general population*." (Lee n.p., my italics) Optimization is not a form of human extension, as trans- or post-humanist would have it, but a process of making your body work more smoothly, giving you more energy, brain power, better moods, a longer and healthier life. It is not in the grand gestures that the potential lies but in the little steps that make life better, more fulfilled and happier. His approach is that already possessing knowledge gives you that 'edge' over the rest of the population. If you take the right measures, you can reap not just the benefits that knowledge brings you but also practically apply that knowledge "to become not just normal but better than normal" (Lee, n.p.) – to attain the American ideal delineated by Elliott, to become *Better than Well*. This discourse of optimization is enmeshed with a latent *rhetoric of responsibilization*. Apart from his generalized advice, Meisel, for example, often uses normative language: He claims that he included three basic strategies that work for everyone in his chapters. Therefore, everyone "should adopt" them because they will "lead to healthy improvements" (6). Similarly, Lee lists "compulsory" supplements such as Omega 3 or Vitamin D, which are beneficial for everyone and should be part of your daily regimen. This type of prescriptive discourse promotes the idea that it is your own fault if your body machine fails you and that it can be amended by individual actions.

Another common thread in Lee's and Meisel's 'studies' is the wholesale belief in scientific solutions. Both follow a science-based approach: They repeatedly stress the well-researched nature of their 'hacks' and their scientific foundation. While Meisel often generalizes in the name of shortness, he nonetheless frequently refers to the "abundance of scientific research" (33) that underlies many of his claims. For Lee, the scientific foundation is already stressed in the subtitle and remains a recurring theme in all his three parts: "cutting edge", "neuroscience based", "strong research backing," "proven efficacy

or safety," "solid scientific backing" are only some of the phrases he uses to underline the strong background in science and research he claims for his hacks. Moreover, both also refer to academic publication platforms such as *PubMed* as a resource to help you make "informed decisions" (Meisel 64). By highlighting the "research backing" of their arguments, they take part in a process of *authentication* through science. Citing scientific sources and stressing the scientific basis of their claims allows them to transfer some of the perceived authority of science to themselves, thereby buying into the cultural ideology of scientism.[12] The importance they ascribe to scientific validation is affirmed through labels such as "powerful" or dramatic. Lee often describes his solutions as the "most powerful," similarly Meisel also often uses phrases like "dramatic results" (in the positive sense). This form of dramatization or hyperbole is used consciously by them to convince their readers of the validity and necessity of the techniques and tools they present. But by doing so they also linguistically connect science to power: Science leads to powerful effects, powerful solutions and dramatic positive changes. It is thus implied that the ultimate source of power over one's biology and body lies in science. The scientific method is the one that will grant people authority over this seemingly last caveat of uncertainty.

Meisel and Lee stress the importance of granting or providing the type of information summarized in their guides to interested audiences on a "quest for knowledge" (Meisel 64). As Lee writes in the last sentence of the introduction, "information is power" (n.p.). Access to information gives you the power (of science) to shape your body and the tools to make informed decisions. For Lee, thus, information, knowledge, and understanding are key to biohacking: it not just enables the individual to better assess their own bodies and their status quo, but it also allows them to find 'fixes' for their problems and give better qualified input to their healthcare professionals.

> A common experience I have when providing consulting to clients is that they often have a huge appetite for learning more about their own individual neurochemistry. *You can't fix what you can't identify and in this context it means that when you understand what is happening inside your own skull a little better, it enables you to tweak and tinker using a range of substances and Behaviours.* (Lee n.p., my italics)

Access to information and a deeper understanding of biological processes for him are a necessary feature of self-directed choices and active patienthood. Serious efforts of biohacking necessarily need to involve "at least some understanding of what is occurring under the hood" (Lee n.p.). In order to manipulate individual biology – "to tinker

12 Interestingly, while I was researching and writing this chapter in July 2018, some of the bigger news outlets in Germany began to report about 'fake science,' meaning scientific studies published in sub-par scientific publications (for high fees) without peer review or the necessary quality control: studies published and amended to fit the buyers' criteria, studies that exaggerate successful animal trials to full-blown cancer miracle drugs, studies that cannot be replicated and so forth. The existence of such studies – and the infrastructure that makes them possible – is also connected to the pressure to publish in many academic disciplines. Still, when communicated to the public 'fake science' has the potential to be highly misleading for the public and patients. If debates about these practices persist, they might also shine a new light on scientism and the validity of scientific claims.

and optimize" (Lee n.p.) – a certain understanding of the underlying processes and systems is necessary. Clearly, the problem with such a view is that it limits the range of those who can potentially use biohacking to those able to understand (and thus use) the information they are now granted access to. Such limitations potentially create new discrimination based on levels of education and (scientific) literacy.

This focus on self-education and knowledge is much more pronounced in Lee than in Meisel. He wants his book to "serve as a tool" that makes these complex topics "more accessible and entertaining" (Lee n.p.). Lee positions himself in the role of a translator or mediator:

> Also, anyone familiar with neurology and pharmacology will have to forgive any gross oversimplifications. There are no shortage of tomes dedicated to the minutiae of pharmacology and the brain which are impossible to understand for those not formally trained. *The goal of this section is to successfully translate that information via simplified analogies and generalizations to enable others to understand what is often referred to as the most complex structure in the universe – the human brain.* (n.p., my italics)

His self-ascribed role is to translate scientific findings into actionable information, even if that entails generalizations and analogies that simplify the processes. So while Lee rightly acknowledges the complex process of translation and the role that translators play in it, his focus on scientific findings sometimes implies that there is a form of 'insider knowledge' that only those in the know possess and can use. This is a trope often found in self-help literature as well. As part of those initiated, in his view, he is there to provide the reader with that knowledge. This view seems to perpetuate an arbitrary form of distinction between science and the rest of the world that so many in the sphere of DIY biology and biohacking denounce and want to tear down. Still, the whole book could also be seen as an attempt to increase the readers' literacy. Lee consciously repeats certain key points – in the beginning he makes this obvious by stating that repetition is key to understanding – and often emphasizes that active biological literacy is needed to biohack successfully.

The idea that knowledge is power and that figures like Lee and Meisel are needed as translators and mediators of scientific knowledge, who turn 'high-brow' scientific findings into actionable information for their clients, seems to reinforce one of the Rose's mutations cited above: Lee, Meisel and other authors of DIY biohacking guides and self-help books can be considered as part of the new class of *experts of the soma*. They are needed to guide and inform the uninitiated, like genetic counselors in Rose's account. Their expertise lies not just in their understanding of biological pathways and scientific discourses but also in their own experiences. Most of them are DIY experts that now use their own journeys of biohacking as a resource for consultations, publications and speaking engagements. Borrowing from religious rhetoric, they are the new 'prophets' preaching to their clients and the general public about possibilities to transform their bodies and lives. They tap into latent cultural desires and fears – for health, wellbeing, maximization and of corporeal vulnerabilities – to sell their expertise. To fulfill the broad promises they make, they draw on cultural discourses of plasticity and scientism to underpin their claims of science-based modulations. This is not to negate the potential to increase the scientific literacy of their readers or even their own innocent desire

to impart knowledge and help others, but rather to stress that here we witness the rise of new "economies of vitality," that the next case study will elaborate on.

Case Study II: Biohacking on the Web – The Example of Asprey's Bulletproof

For cyber-hacking, the maker movement and DIY bio, the Web has become one of the most important information and community-building tools. Used as a collaborative space of exchange, a cheap, readily and world-wide accessible platform for discussion, the sharing of experiences and 'how-to'-guides, it can rightly be considered as one of the preconditions that facilitated the rise of DIY biology. No wonder, then, that is has also become a playground for the types of body-bio-hacking that are the topic of this chapter. For them, the Web has become a platform used for the dissemination of information and for edutainment but also a virtual space populated by online shops and direct-to-the consumer marketing.[13] More than the printed self-help guides above, the blogs and websites under consideration in this case study are geared toward commerce.[14] Here we are not in the collaborative, Web 2.0 space evoked by other DIY practices, but in a use of that space which emphasizes authority – of information, science, the authors and experts behind the blog – to sell services, products and information. As such, it is a highly competitive space, in which 'ranking first' on *Google* means converting more customers and maximizing profits. Their immediacy, visuality and accessibility make such webpages and blogs perfect examples of contemporary 24/7, digital knowledge-society. They incorporate, even amplify, social and cultural trends, their fast pace allows them to much more flexibly react to the demands of their audiences, their modest outlay means that also 'niche' or countercultural trends find representation and can increase their coverage.

One of the most widely known examples of such a combination of education and commerce is Dave Asprey's *Bulletproof*. Dave Asprey, a prominent representative of the body hacking movement, became famous for his signature *Bulletproof* coffee, a special way of brewing coffee involving amongst other things large quantities of grass-fed butter and oil. This combination of coffee and fats was cleverly marketed and widely reported on also by celebrities and the media. From there on he expanded his business, gradually including guide books – his *Bulletproof* diet self-help book (2014) and anti-aging manual *Super Human* (2019) are also ranking high on *Amazon* – and a podcast, supplements and "fatwater," prepackaged *Bulletproof*-style cold coffee and training machinery. Recently, *Bulletproof* also started to open cafés in Seattle, Santa Monica and Los Angeles. While the hype around *Bulletproof* has calmed down in the last years, the success of this brand is one of the most prominent cases of consumer-oriented, DIY

13 All of them use some of the most common online marketing techniques popular today. Despite being avenues for education, their blogs, for example, double as forms of content marketing used to draw people toward the web shops and generate potential costumers (leads). They also run consumer-specific advertisements online.

14 A short note on terminology: While originally 'weblog' was used to denote such informational, journalistic webpages, I will use the truncation 'blog,' that is much more commonly used today.

biohacking of the body. The wide reach has popularized biohacking among a broader audience and, to a certain degree, attached a name and a face to the practice.

Already the name of the brand is telling: "bulletproof," free from harm, *invincible*. It takes up a common cultural metaphor, employed also in other pop-cultural formats.[15] Being bulletproof means that you are strong; you, your body and mind, without failures or damage, impenetrable and, almost, death-defying. The name itself, thus, is a promise, the emblematic goal of the biohacking practices endorsed by Asprey and his team. The *Bulletproof* Blog then introduces the reader to ways and means through which this goal can be reached. It consists of a collection of 'How To's' – how to stop sugar cravings, eat for a stronger brain, strengthen your willpower muscle, find your ideal carb intake, amongst other examples – tips, lists, recipes and other pieces of advice. Many of these mimic forms of 'journalism' commonly found in popular magazines, such as stereotypical women's magazines filled with advice on finding a partner or losing weight. The themes of the *Bulletproof* guides, however, do not just include diet and exercise but also common biohacking topics such as grounding/earthing, supplements and performance-enhancing drugs, as well as more mundane aspects such as social connection and parenting. Interestingly, many of the pathways or mechanisms people are advised to modify are similar to those described by Lee, such as BDNF, the Miracle-Gro of the brain.[16] It is no surprise, then, that also the *Bulletproof* Blog has a pronounced focus on explaining the biology behind their biohacks, often in a molecularized form that focuses on biochemical pathways and individual molecules or vitamins.

Following this logic, for Asprey biohacking is about *taking control of your own biology*. His view combines the idea of controlling your body and your biology with attempts to upgrade, enhance them to become "superhuman." An infographic about "What is Biohacking?" on the *Bulletproof Blog* offers a concise, dictionary-style definition: "Biohacking: (verb, noun) (v) To use science, biology, and self experimentation to *take control of* and upgrade your body, your mind, and your life. (n) The art and science of becoming *superhuman*" (my italics). In the text accompanying the graphic, the first part of the definition is changed to "(v) To change the environment outside of you and inside of you so you *have full control of* your biology, to allow you to upgrade your body, mind, and your life" (Asprey, "What Is Biohacking", my italics). In this definition, the self as agent is responsible for creating optimal conditions inside and outside, mind and matter are

15 Some pop-cultural examples from the last few years include two highly popular songs – La Roux' "Bulletproof" (2009) or David Guetta and Sia's "Titanium" (2011) – and, taking up the cultural imaginary created by superheroes (cf. Chapter 3), *Marvel´s Luke Cage*, a web TV series produced for *Netflix* (2016/2018). Luke Cage is a literally bulletproof, African-American superhero, whose powers are the result of human experimentation. Cage, of course, also takes on a host of different meanings in the context of debates around police brutality against African-Americans and is premised also on a culture in which death by bullet is an everyday occurrence. This superhuman theme is also explicitly taken up by Asprey's definition of biohacking.

16 BDNF – brain-derived neurotrophic factor – is a growth factor that works on neurons in the central and peripheral nervous system, encouraging the growth of new neuronal connections and supporting existing ones. As such, it is connected to long-term memory, neurogenesis and neural development (Spektrumverlag).

subject to conscious decisions made by the self. A similar definition in a guide to "Going Bulletproof for Beginners" on the blog enriches this standpoint with an emphasis on the personalized and experimental nature of biohacking: "Biohacking (verb, noun): (v): changing your environment from the inside-out so you *have full control of* your biology; using your body as your personal laboratory, finding the exact hacks that work for you. (n) The art and science of becoming *superhuman*" (Asprey, "Going Bulletproof", my italics). The more attempts at definitions one considers, the more persistent Asprey's preoccupation with the notion of control seems to get. In an interview with Tim Lewis for *The Guardian* in May 2017, for example, Asprey is asked about his definition of biohacking: "Biohacking," he claims once more, "is the art and science of changing the environment around you or inside you so that you *have full control of* your own biology" (T. Lewis, my italics). His own attempts of biohacking, he says in this interview, where less about improving his health, and more about "having control of [his] own biology" (T. Lewis). Control seems to be a crucial factor for Asprey that can also be read as a promise to potential clients: In a time where control over many aspects of one's life is decreasing and vulnerability abounds, the body and its biology become the one thing that people themselves can have control over, facilitated by technology and science. Through biohacking, helplessness is countered with power, subordination and subjectification with control. At the same time, this emphasis on control stands in stark contrast to those early associations with hacking – unlawful, unregulated, covert, countermining. Hacking, in its original form, undermines control, while here the same terminology is used to express the opposite. We might thus ask whether these uses are more marketing than substance: Similar to Lee and Meisel, the use of hacker terminology might be a process of linguistic framing (as modern, technological, scientific, experimental), while the emphasis on control promises to fulfill latent cultural desires.

According to the same infographic the "hackable" entities in human life include mind, body, and lifestyle. All can be optimized in Asprey's view to think faster, get stronger, live smarter, and be healthier ("What Is Biohacking"). More concretely, the types and techniques of 'hacking' Asprey includes in his definition range from supplements, meditation, mental attitude, control of the environment, to the tracking of inner processes, changes in diet, control over sleep, and fitness regimes ("What Is Biohacking"). Similarly, the guide to "Going Bulletproof for Beginners" recommends *Bulletproof* articles as starting points that look at diet (Bulletproof Diet and Bulletproof Coffee), ketosis, healthy fats, medium-chain triglycerides (MCTs), intermittent fasting, sleep, stress management, detox, supplements, and nootropics (Asprey, "Going Bulletproof"). All these techniques, as Asprey prominently includes in the infographic, "use empirical evidence" to provide "evidence-based upgrades" ("What Is Biohacking"). This definition of biohacking, overall, covers a similar territory as those given by Meisel and Lee: they include physical, mental and environmental factors and focus on science and experimentation. What sets Asprey apart is his pronounced focus on power and control over biology and nature.

While the Bulletproof coffee and diet are disputed among dieticians and scientists,[17] like Meisel and Lee, Dave Asprey sells his brand on the promise of its scientific basis and accuracy. In the guide to "Becoming Bulletproof" for example, Asprey claims that he is using the latest research to guide his selection of hacks: "I work on the *cutting edge of research and theory*, with some of the stuff I do being in the early stages. *Years of research* help to determine what's safe enough to try it on myself, and I continue to use and refine what works." ("Going Bulletproof") Also in the interview for *The Guardian*, he feels compelled to emphasize how his approach is "very science-based:" What he does is using the scientific method of observation, hypothesizing, and testing. "The stuff I'm doing isn't just like flip of a coin – it's a hypothesis based on reading thousands of papers about biochemical pathways" (T. Lewis). Here he draws on the common belief in scientific solutions and the trust of science in society. Often the *Bulletproof* Blog includes references at the end of a blog post, mostly to scientific journals such as *Nature*, *NCBI*, *PLOS*, or *Wiley*. These serve to validate the given information and make sources transparent to the reader – a form of authentication through science. Something similar happens in the *Guardian* interview with Asprey. Asked about criticism of pseudoscience that his methods receive, he answers: "So I welcome all the critics: all they need is to turn the book over and look at the quotes on the back from the most successful and well-respected brain doctors and anti-ageing doctors." The "most successful" and "well-respected" doctors are used to transfer some of their perceived expertise and authority onto his methods, after all medical personnel is still regarded highly in culture. He overtly evokes figures of authority to bolster his own credentials. But *Bulletproof* also provides a more emotional, community-oriented validation of its methods: A community of like-minded individuals striving for a similar goal is evoked, often through customer experiences or customer references, as Asprey also includes in his infographic. A common tool in the online marketing sector, they try to sell by making biology and hacking more *personal*, validating its success through the experiences of others.

As we have already seen above, science and self-experimentation are crucial in Asprey's attempts at a definition of biohacking. The infographic deals with the experimental nature of biohacking by including a section on the "process" endorsed by this method. The focus is on "N=1" experimentation, the readers' "own experiment." Grounded in their own biology ("test your biology"), readers are encouraged to "pick goals" and "track results" to "see what's working" for them (Asprey, "What Is Biohacking"). The wording here also highlights the do-it-yourself approach used by Asprey: DIY experimentation, following the scientific method, is proposed as the best way to optimize wellbeing. The individual, however, clearly is responsible for taking the correct measures on this road to optimization. As is typical for DIY approaches, the focus is not just on the end result, but also on the process- and project-oriented nature of the endeavor. The end goal of this process, in the *Bulletproof* universe, is to "upgrade" the human body to become "superhuman," as his many definitions of biohacking illustrate.

17 For example, journalist Julia Belluz includes a clinician's view into her report on how the Bulletproof Diet is "everything wrong with eating in America" on Vox.com (2014), linking Bulletproof to other popular fad diets, which promise consumers more than they can deliver while being overly prescriptive and condemning of other diets.

The optimization potential of the human body is stressed on multiple occasions on that infographic: To do so, Asprey uses key phrases such as "get stronger + think faster + live smarter" ("What Is Biohacking"). As we can note, they once more align with neoliberal ideals of competition and performance. What these and similar expressions have in common is a continuous use of comparatives and superlatives. The goal is always to somehow be more than you already are. This is also emphasized in the guide to *Bulletproof*: "Upgrade your life and get better at everything. No matter your weight, your background, your family or work situation, I believe you can upgrade your body and your brain to perform better than you *ever* have." (Asprey, "Going Bulletproof")

The most important step in that process, Asprey writes a few lines down, is the "belief that you *can* change" ("Going Bulletproof"). The general assumption behind many of his molecularized, vitamin- and supplement-based 'hacks' is that of a certain plasticity of the body and brain. Modification, for Asprey, is possible. Instead of older assumptions of genetic determinism or critical periods in brain development, *Bulletproof* endorses a view of the body whose very fundament is its ability to change. Once more, Asprey evokes his personal experience to underscore this argument: "I can tell you firsthand that you're not condemned to live with the body and brain you were born with." ("Going Bulletproof") To use Emerson's words, the body and brain are "not fixed but fluid" ("Nature 1836" 80) – nature is not a prison you cannot escape but a playground of possibilities. Instead of being subjected to your body, you can take control and change it, at least if you believe that such change is possible. Here *Bulletproof* combines a rationalist claim based on current scientific research with an affective appeal. The reader is empowered to take control into their own hands and create the body and life they always dreamt of.

It should not be disregarded, however, that the information provided by *Bulletproof* and other similar endeavors do not primarily serve the function of promoting self-education and increasing literacy – even though they might serve this purpose well.[18] Rather, they are 'entry points' for visitors of the webpages that satisfy a latent need: for information and knowledge, an open ear, tools to help themselves. The goal is to turn an interested reader into a customer. For Asprey, this process is rather straightforward. His online shop is integrated into the blog, so that customers can shop in one stop. Customers can order coffee products, foods and drinks, protein powders and bars, as

18 Asprey's successful company is not the only example of this type of biohacking business. *Selfhacked/Genius Labs* is a similar endeavor: Presented as an information blog, *Selfhacked.com* makes its profit by selling electronic guide books and diagnostic services as well as providing (probably paid) links where you can buy supplements. This page offers the reader information on single nutrients, natural substances, herbs, drugs and nootropics. But more than that, the reader can familiarize themselves with the science of biohacking – including descriptions of biochemical pathways – or access specific guides on medical conditions from autoimmune diseases to mental health or "healthy interventions" for enhancement, diet, sleep, stress and detoxification. The name, thus, is telling of its approach: the self hacking its own biology, an overt reference to the DIY culture of biohacking. But *Selfhacked* also wants to offer a different route for those who feel unheard and neglected in the medical establishment by providing them with information and counseling on how to "fix" their own medical problems. Their approach clearly draws on the discourses of active patienthood and patient empowerment so prevalent in medicine during the past few decades.

well as *Bulletproof*'s signature supplements, the books and merchandise. With this goal in mind, one can reasonably argue that the rhetoric of empowerment, modification and optimization in his other 'channels' is also used to responsibilize the reader in the name of consumption. Following the 'self-help' scheme of problem–solution, readers are confronted with a real or presumed problem or deficit, for which *Bulletproof* cannot just offer context and information but also the tools to solve it. People are instructed to follow certain practices, take specific supplements or make changes to their lifestyle for which the shop offers everything they need to succeed. Hacking the body – here integrally linked to optimizing its status quo – becomes a commercialized enterprise: The DIY hacker is necessarily a consumer. It is this consumption-oriented form of DIY that has moved outside of the niche into *mainstream markets*. The logics behind it, however, are still the same: You can and even should 'do-it-yourself.' It is still the DIY patient as health consumer, but this time they are not limited to solutions for medical problems but take part in the contemporary race for self-optimization. It is here that DIY and the marketplace come together to create new "economies of vitality" that extract commercial value from the age-old desire for human perfection and the contemporary belief in physical malleability (Rose, *Politics of Life* 5-7). These "economies of vitality" today have largely been displaced into the sphere of the digital: The possibilities of the Web make them more accessible and more encompassing than previously possible.

To Summarize

It is very much the ideology of the active, informed patient that is required and perpetuated in these examples. Individuals are expected to be highly involved in the decision making around their own bodies. The case studies in this chapter show that this ideology has today reached a new degree of commercialization, leading to an abundance of products marketed to the 'patient' and new forms of professionalization. But this form of DIY also exhibits a strong demand for access to information, knowledge and tools. Both are brought together by drawing on popular discourses of individualization: Stressing the importance of individual solutions makes it possible to both fulfill an ideal of patient education and empowerment *and* commercial interests as service providers. Information itself is not enough, you might still need someone to help and guide you on your individual journey, the logic goes. Initiating a personal connection through referencing their own experiences and those of others allows the new *experts of the soma* to sell their services and bolster their credentials. Biohacking, in these case studies, becomes a tool of (self-)marketing and economic exploitation. The self, once more, is responsibilized to optimize its own corporeal status-quo to enhance its productivity and wellbeing. Social and structural factors that impinge on individual possibilities are all but elided. There is, however, also room for a spirit of collectivity: As the example of *Bulletproof* shows, it is in the sphere of the online world that connections are made, (virtual) communities created, allegiances to a cause formulated. People present themselves and define themselves as part of a larger group, a community that shares experiences, as the hashtag "#iambulletproof," promoted in social media, serves to show.

The goal of this 'journey' of biohacking the body is two-fold: Self-knowledge of one's own biology and the optimization of its current state of being. This type of hacking,

necessarily, promises to have material results on the body: to be and feel better, fitter, healthier, stronger, happier, live longer, enhance cognition, treat depression and anxiety. Biochemical pathways and the molecular composition of the body are expected to be changed and 'supplemented,' with overarching effects on the whole organism. Still, whether the promoted effects actually occur and are caused by the marketed interventions remains unclear. It is noteworthy that much of what Lee, Meisel and Asprey reframe as 'hacks' are actually old and well-known practices such as yoga, exercise, or vitamin supplementation. Using a new language integrates those practices into a science-based and solution-oriented outlook on life.