CONTENTS OF THE SPECIAL SECTION

In the articles published in this special issue commemorating a centennial of the Bolshevik Revolution, the contributors examine certain illuminating episodes in the history of the Soviet *zdravookhranenie*, analyze its influence on concurrent public health ideas of influential international players, and consider its legacies in contemporary post-Soviet Russia.

"Propagandizing the Healthy, Communist Life in Early Bolshevik USSR" by Starks (p. 1718) describes the challenges faced by Narkomzdrav in its attempts to introduce the Bolshevik visions of health and disease to the country's still largely illiterate and ignorant population, who were suspicious of modern medicine, through extensive education and propaganda campaigns. An elaborate poster was produced for the 10th anniversary of the Bolshevik Revolution and celebrated Narkomzdrav's perceived successes in fulfilling its mission of protecting the health of the people. It serves as a convenient entry and a striking visual aid to Starks's analysis of the participants, goals, scope, means, targets, and results of these campaigns that spread the message of healthy lifestyles and disease prevention.

In "A Revolutionary Attack on Tobacco," Starks (p. 1711) details the Narkomzdrav approach to tobacco as a health hazard and the agency's pioneering efforts to curb its use on a national scale by means of vigorous antismoking campaigns and special smoking-cessation programs. Current economic imperatives, however, have derailed the agency's attempts to limit tobacco cultivation, production, and sales. Morabia's editorial (p. 1708) places Starks's analysis in a broader international context by comparing the Bolsheviks' and the Nazis' attitudes toward tobacco.

Grant's contribution (p. 1725) illuminates an important but little studied part of the Soviet health care system, nursing. It traces the historical development of nursing in Russia and addresses continuities and changes in the social status, training, self-image, numbers, and roles of nurses in the transition from the imperial to the Soviet and then from the Soviet to the post-Soviet systems of health protection.

Rivkin-Fish (p. 1731) examines direct and indirect legacies of Soviet *zdravookhranenie* in contemporary Russian policies regarding addiction, HIV, and abortion. Her article surveys the preservation of certain Soviet patterns in doctor–patient relations, institutional structures, and ideological strictures in the health system of Putin's Russia and explores the varying uses of the Soviet past in articulating, validating, and promoting contemporary policies.

In addition to these analytical essays, two "Voices from the Past" articles present the observations and immediate impressions of the Soviet health system by two highly influential Western experts who visited the country after the Bolsheviks had come to power.

The first voice (p. 1740) belongs to Alan Gregg, a high-ranking officer of the Rockefeller Foundation Medical Education Division, and is extracted from a daily journal Gregg kept during his fact-finding trip to Moscow and Leningrad in December 1927, less than a month after the nationwide public celebrations of the 10th anniversary of the revolution. Although his official mandate was limited to exploring possibilities of cooperation between Narkomzdrav and the Rockefeller Foundation in the specific area of medical education, Gregg's diary provides a panoramic, although necessarily telegraphic, view of Soviet *zdravookhranenie*. Gregg recorded his conversations with its key figures, ranging from Commissar Semashko and his underlings to the leading lights of Soviet clinical medicine and biomedical research.

The second voice (p. 1736) belongs to Henry E. Sigerist, a leading Swiss American historian of medicine and health system analyst, and comes from his 1937 book *Socialized Medicine in the Soviet Union*. Sigerist had spent several months in the country two years before, and his book presented his thoughts and analysis of the health care system he had carefully studied and came to admire.

Taken together, the analytical essays and witness testimonies offer an instructive, if somewhat kaleidoscopic, glimpse at the promises, realities, and legacies of a unique experiment in creating an integrated, universally accessible, state-run health system inaugurated by the Bolshevik Revolution a century ago. AJPH

Nikolai Krementsov, PhD

Assessing the Public Health Impact of the mHealth App Business

See also Millington, p. 1696, and also Grundy et al., p. 1783.

Do mobile health applications (mHealth apps) promise solutions to such pressing public health problems as increasing access to care, reducing inequalities in health, lowering health care costs, and providing people with new tools to reduce risky behavior and manage chronic diseases? To answer this question, public health professionals and researchers need to examine how the more than 259 000 mHealth apps now available in the US market[1] contribute to improved population health now and will in the future.

In this issue of *AJPH*, Grundy et al. (p. 1783) provide evidence that may temper the often uncritically enthusiastic response to mHealth apps from the media, business, and some health professionals and policymakers. In

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a social network analysis of the financial relationships among app developers, investors, funding sources, and content advisers of a purposive sample of 491 mHealth apps in the United States, Canada, and Australia, the authors found several causes for concern.

CAUSES FOR CONCERN

First, they report that most best-selling mHealth apps are developed by private companies with multiple connections to larger corporations in the technology, fashion, entertainment, and pharmaceutical sectors and with venture capital firms. Leading developers of health apps include such major transnational corporations as Medtronic plc (Ireland), Koninklijke Philips N.V. (Netherlands), Google (US), Omron Corporation (US), Apple, Inc. (US), LifeWatch AG (Switzerland), Withings (France), and Nokia Corporation (Finland). Grundy et al. also note that the mHealth financial and production ecosystem remains "hidden from public view," making it difficult to assess bias and conflicts of interest. Few major apps have clearly identified scientific or clinical advisers, and these advisers may hold multiple scientific, clinical, and financial roles. In the pharmaceutical industry, these blurred lines have contributed to the inappropriate use of medications, withholding data from regulators, and misleading marketing claims.[2]

Several broader trends provide additional causes for concern. First, the evidence base for safety and effectiveness of mHealth apps is thin. In a review of 137 patient-facing mHealth apps, Singh et al. found that few had been evaluated, especially for use by vulnerable populations.[3] Only 23% of the tested apps responded appropriately when a user entered information that indicated a danger such as suicidal mood or ideation. More than a third (36%) lacked any privacy policy. In addition, sellers, users, clinicians, and researchers did not agree in their ratings of apps, suggesting lack of consensus on what makes an app helpful and effective.

Second, mHealth apps have the potential to widen rather than reduce inequalities in health. New technologies often first benefit the better off. Grundy et al. note that because health apps are often monetized and linked to the promotion of other products and services, they are targeted at the "White, worried, and well" rather than the poor and underserved (p. 1783). For the large corporations that are expected to dominate the mHealth market in coming years,[1] the focus on profitability shapes which apps get developed and which populations will be targeted in marketing these products.

JEOPARDIZED PUBLIC HEALTH

These market trends may have other adverse consequences. As more businesses enter the field, the number of new apps is growing rapidly, with 100 000 new products added in 2016.[1] At the same time, demand, measured in sales, is slowing, falling from a 35% growth rate in 2015 to 7% in 2016.[3] In other business sectors, the combination of market consolidation, increased competition, and overproduction has jeopardized public health. In the firearm industry, for example, new technologies led to overproduction of mass-manufactured guns, and industry consolidation left fewer, bigger companies with more resources for product development and marketing. The subsequent drop in demand for firearms from hunters and sports shooters led the industry to restore profitability by developing more lethal weapons and marketing them aggressively with fear-based campaigns.[4] Similar trends have been documented in tobacco, alcohol, and ultra-processed food.[5]

In this case, maintaining profitability as the number of mHealth apps for sale grows may lead app developers to make more misleading claims, cover up defects, or market unscrupulously. The large companies that are consolidating control of this market have the deep pockets needed to invest in marketing, lobbying, and challenging public oversight. Already weak and overlapping regulations, inadequate funding, and lax enforcement limit public monitoring of mHealth apps. James L. Madara, chief executive officer of the American Medical Association, has called mHealth apps "digital snake oil," observing that "though these products may be well-intentioned, far too many provide incomplete or inaccurate snapshots of a patient's health and ultimately fail to deliver on their promises."[6]

LACK OF REGULATION

At present, most mHealth apps available to consumers are not regulated by the Food and Drug Administration (unless they connect to a medical device) or by the privacy rules of the Health Insurance Portability and Accountability Act of 1996.[3] Although the Federal Trade Commission has suggested best practices on privacy, security, and truthful claims, it has neither the expertise nor the staffing to monitor the marketing practices of the mHealth apps available in the United States. In the past few years, the tech, pharmaceutical, and fashion companies that are moving into mHealth apps have pioneered a wide array of new marketing strategies. These include cloaked Web sites that extoll the virtue of products without disclosing their corporate sponsorship, "native advertising," in which users tout a product without revealing they are being rewarded by the company, and "content marketing," in which digital and traditional media carry stories sponsored by producers of products, sometimes without disclosure of their role.[7] As the federal government moves to rescind or defund key public health regulatory functions, health app developers seeking to grow their market share could promote wider use of untested or unsafe products.

For universities, mHealth apps raise other questions. Are university-based mHealth app developers required to disclose their corporate affiliations or report their income? Are they liable when companies irresponsibly market products researchers have developed? Will the lure of patenting health apps lead researchers to abandon open source apps, favoring the development of apps for customers who can afford them, rather than those who could benefit most?

NEED FOR EMPIRICAL EVIDENCE

In the final analysis, new technologies are neither good nor bad for health. Neither uncritical promotion of mHealth apps nor reflexive Luddite opposition will help to assess their long-term impact on health.

What determines whether mHealth apps or other emerging technologies provide net benefit or harm to health is both the specific characteristics of the products and who has the power to decide how they are deployed. Public health researchers can contribute useful evidence in both domains.

Certainly, empirical evidence is needed to determine the safety, benefits, and risks of particular mHealth apps for specific populations. In addition, however, as Grundy et al. observe, more evidence is needed on how the structure, governance, and practices of the mHealth industry influence what products are developed, how and to whom they are marketed, and to what extent they contribute to improving population health and reducing health inequalities. AJPH

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Health: An Optimal Commodity for the Attention Economy

See also Freudenberg, p. 1694, and also Grundy et al., p. 1783.

The media scholars Kathleen Oswald and Jeremy Packer have a helpful turn of phrase for assessing our present-day communication landscape: the media environment, they say, is devoted to keeping people "fixed in transmission"—meaning always engaged with communication technologies—as opposed to fixed on one transmission or broadcast in particular.[1] To be sure, industry has long understood the value of keeping our attention for prolonged periods. But in the past you eventually turned the television off and went to another room. The same was true for radio. Newspapers were read and discarded. To be fixed in transmission is to be "switched on" constantly with the help of mobile technology.

Grundy et al.'s social network analysis of financial relationships underpinning the development of health and fitness apps (p. 1783) marks a key step in understanding how this contemporary communication landscape is evolving in conjunction with our efforts at health promotion. We are now in an attention economy.

THE ATTENTION ECONOMY

The notion of an "attention economy" is grounded on the idea that attention operates like any other commodity: it can be captured and sold. The communication scholar Dallas Smythe's concept of the "audience commodity" is useful in understanding how the attention economy works.[2] Smythe begins with a question: "What is the principal product of the mass media?"[2(p23)] The obvious answers are meaning, entertainment, education, or other common outcomes of communication. But consider the economics of something like a football broadcast. The television network buys the rights to broadcast the game or a season's worth of games. But rather than show the game in its entirety without breaks, the network allocates time for commercials as a way of recouping expenditures and, ultimately, accruing profit. Commercial sponsors pay for the right to show their products and services to particular audience demographics; football and pick-up trucks evidently go hand in hand. Marketers capitalize on a captivated audience.

Thus, to the question at hand, Smythe's answer is not education or entertainment but rather audience power: something that is "produced, sold, purchased and consumed, *it commands a price and is a commodity*."[2(p26[emphasis added])] Said otherwise, Smythe recasts audience experience as a form of labor. The simple act of turning our attention in one particular direction creates a product that is ripe for commercial exchange.

Smythe's work has been highly influential. But it is also a product of its time. We are now fixed in transmission. Our communication devices are portable—wearable even—and content is accessible anywhere and anytime, as marketers often emphasize.[3] A key function of these changes is the expansion, in both geographic and temporal terms, of the opportunities industry has to capture our attention. To stick with the football example, one might watch the game at home, work, a bar, or anywhere in between. Moreover, sensor technology has enhanced our capacity to direct our attention in different directions at one and the same time. An activity-tracking wristband effectively directs the user's attention to steps

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