

Operational Media: Cybernetics, Biopolitics and Postwar Education¹

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Abstract: This article develops the concept of «operational media» to think through the deployment of utility/useful cinema in the context of cybernetically informed educational policy. The paper argues that cybernetic concepts of communication, feedback loops and homeostasis were central to the pragmatic installation of media at the center of postwar mass education. Links are made to the dominance of cybernetic ideas in postwar social science, including social psychology, sociobiology and behaviourism. A consideration of the UN's operational media allows for a reconsideration of the agency's communicative mandate as biopolitical and governmental. Educational policies influenced by the UN were doubly concerned with technologized classrooms: cybernetic ideas presented themselves as politically neutral, while offering efficiencies in the delivery of content. Cold war citizenship was thus conceived as a form of training that would pragmatically lead to the rebalancing of a volatile international situation. *Carrefour de la vie* (1949), made by Belgian filmmaker Henri Storck for the United Nations, is presented as an example of the centrality of mental health for citizenship training in postwar biopolitical regimes. In particular, the tension between the film's humanist and cybernetic strands are considered. *Au Carrefour de la vie* is considered as a transitional text, presenting a humanist story of childhood in postwar life that simultaneously prefigures the operation of a controlled society.

Keywords: Cybernetics; Educational cinema; United Nations; Henri Storck; mental health; citizenship.

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1. Introduction

In the field of media studies, there has been a growing interest in the category of useful or utility cinema, «a body of films and technologies that perform tasks and serve as instruments» (Acland & Wasson 2011, p. 3). Hediger and Vonderau

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(2009) emphasize that utility cinema «cannot be divorced from the conditions of their production and the contexts of their use» (p. 10). This paradigm has been essential to the expansion of the object of cinema studies in a number of key ways, including to the non-theatrical realm of educational and health film (Orgeron, Orgeron & Streible, 2012; Ostherr, 2005). Here, I build upon that work to discuss the related concept of operational media, which is particularly well-suited to exploring topics that are ontologically and epistemologically related to the human-machine interface so prominent since the Second World War. Operational media are a common reference point within the fields of engineering and cybernetics (Halpern, 2014). First wave cybernetics, a postwar paradigm based on a simplified model of human psychology and an emphasis on the universality of information circulation, rather than the messier world of semantics, was entirely oriented toward pragmatic considerations of operability (Hayles, 1999). In Norbert Wiener's (2019) influential introduction to the concept of cybernetics, first published in 1948, considerations of communication and control were taken to be the defining feature of all organic and non-organic systems, whether nervous systems, ecosystems, technical systems or social and political entities.

Emerging out of wartime research that blended psychology with machine logics, cybernetics was championed after the war as an apolitical universal model for technological civilization. A techno-scientific approach to education imagined the incursion of systems thinking and engineering logics into postwar classrooms. As Egle Rindzeviciute (2016) notes in her history of cold war technocracy, the system-cybernetic approach was deemed to be «value-free» and was paralleled with a new approach to political problems as the purview of neutral scientific experts. Many of these ideas had been developed in the crucible of wartime laboratories, including the linking of education to machinic circuits, which had been utilized at scale to train military operatives. After the war, this research was strongly supported by the largesse of Rockefeller and other American philanthropic foundations that promoted an apolitical, technophilic approach to education (Geoghegan, 2011). As Turner and Larson put it, «no intellectual movement dominated the postwar American intellectual landscape as completely as cybernetics. Its key concepts — feedback, homeostasis, information, and entropy among them — became the coin of the realm in disciplines ranging from ecology to political science» (2015, p. 58). Integrating media into educational circuits became central to the cybernetic vision of postwar life (Geoghegan, 2017).

The concept of operability presents a continuity with cybernetic philosophy itself, showing just how deeply this logic has become embedded in a range of fields. Operational media is often algorithmically organized, concerned with accomplishing a task within a cybernetic circuit. Industrial and promotional media have been characterized as operational (Patenburg, 2016), as has social media (Lovink, 2012). Basing my analysis on a media archaeology that considers media in relation to the historical conditions of their emergence (Bakhtin, 1994; Williams, 1974), my proposition in what follows is that various media forms may be seen to express cybernetic logics, the pre-eminent philosophy of postwar techno-capitalism, including foregrounded visions of communication and control. Educational and documentary media in particular are genres in strategic positions to operationalize

social visions. Indeed, in their orientation toward the future they may be said to share the pragmatist sensibility of much cybernetic thought (Peters & Peters, 2016). Educational media produced by the United Nations (UN) in the late 1940s has been considered in terms of its ideological messaging (Alleyne, 2003), but might also be productively considered in relation to cybernetic visions.

Mid-century educational media produced by the UN and its agencies was arguably made along operational lines similar to other stimuli to be fed into cybernetic teaching machines. French philosopher Jacques Ellul was one of the more pessimistic diagnosticians of the eradication of humanism that this intellectual turn implied. His famous study of postwar French society highlighted the paradoxes of technological education (Ellul, 1964). New forms of education, he argued, were at the heart of new political systems that emphasized democracy. Yet technological education would be attained at the expense of the support for humanist values. Children were to become technicians through an educational path that had become tantamount to training in which «a profound and detailed surveillance of the child's activities» promised to lead to something called «freedom» that was, in actuality, more like a «joyful serfdom» (Ellul, 1964, p. 347). In his view, the «psychopedagogy» of humane education had finally come to paradoxically equate social good with social conformity. «What looks like the apex of humanism» he wrote, «is in fact the pinnacle of human submission ... Education will no longer be an unpredictable and exciting adventure in human enlightenment, but an exercise in conformity and an apprenticeship to whatever gadgetry is useful in a technical world» (Ellul, 1964, pp. 348-349).

In terms of both the technical training that Ellul referred to and the educational media made on a wide range of topics, postwar education was closely connected to prevailing social psychological and sociobiological theories that imagined students as black boxes plugged into cybernetic circuits (Galison, 1994). By way of the concept of operational media I hope to indicate the overlaps between educational theory and cybernetic visions of the subject as manifest in educational cinema's texts and circuits. While the UN and its cultural and educational agency UNESCO explicitly maintained a humanist orientation and discussed the constitution of media publics (UNESCO, 1950) here I want to consider the ways in which the agency's work actually took place at the level of populations, what A.E. Birn (2014), building on Foucault's work on governmentality and biopolitics, calls the «technobiological» (p. 136) (see also Foucault, 1990; Jaeger, 2010). My gamble is that we may consider this work on technology-enhanced and/or controlled populations in relation to a cybernetic model of communication.

In order to make my argument, I consider the relationship between American cybernetic theory and pragmatic and behaviourist philosophies of education. Concepts central to humanistic education, such as «agency, consciousness and autonomy» were displaced in cybernetics by the more ambiguous concepts of «circuits, cognition, and automata» (Halpern, 2014, p. 224). While these machinic terms could still be used under the humanist banner (as Wiener did), they also blazed a trail to a posthumanist imaginary in which humans and technologies would become horizontally interconnected (Hayles, 1999). As an example of emergent cybernetic thinking, I analyze a film by Henri Storck about juvenile delinquency made for the UN in 1949 in which psychobiological visions of the subject overlap

with the sociobiologic operation of educational media as part of the teaching machine assemblage (Haraway, 1991). I propose that the film might be productively considered as an emergent form of operational cinema, part of the way in which the postwar UN mobilized media infrastructures to scale up educational initiatives to the international level, with the specific intention of affecting educational policies and practices. Specifically, I propose that we consider the film in terms of its attempt to turn media into an operational technique for the UN's strategies. I conclude that educational film is able, in this case, to reveal the contradictions of post-war thinking about both psychology and education, displaying universal humanist visions brushing up against cybernetic and sociobiologic operations in compelling ways.

2. Operational film and Teaching machines

After the war, education became a way in which UNESCO and other communicative arms of the UN, attempted to operationalize the lofty principles of the agency set out in its charter in 1945 and in its universal statement on human rights of 1948. While the dominant UN/UNESCO discourse expressed a vision of large-scale media publics pursuing democratic relations, the agency's operational work often took place instead at the technobiological level of the health, education and management of populations (Druick, 2020). The challenge for UNESCO's staff in general was to «transform...broad mandates into workable doctrines, procedures, and ways of acting in the world» (Barnett & Finnemore, 2004, 5), and the same might be said for filmmakers trying to find practical ways to communicate and visualize the organization's abstract principles. Education was singled out for special attention in the agency's pragmatic project:

One of the chief aims of education today should be the preparation of boys and girls for intelligent participation in a world society, rich in its diversity, yet unified in its goal of peace, security, and a fuller life for every human being. This is essential, despite the fact that such a society is still far from being realised at this point in world history. Preparation for such a world society should be carried on with pupils of all ages and in all the schools of the world. It should stress the formation of attitudes, the acquisition of skills, and the assimilation of knowledge essential to the construction, maintenance and advancement of a united world. This task involves every teacher of every subject (UNESCO, 1948, p. 1).

This statement, from a UNESCO pamphlet, illustrates educational historian Marc Depaepe's observation about the close connection between education and morality in the postwar welfare state. Depaepe argues that the turn toward education as the «focal point for addressing or solving larger human problems» — which he terms «educationalization» — leads to the progressive institutionalization and, somewhat paradoxically, the infantilization of children (2012, 167). This argument is part of a rich vein of social and political thought that suggests that active citizens are too challenging to be actualized in modern technocratic democracies. The perfect modern citizen, in that sense, is docile and conservative (Foucault, 1979; Rose, 2010). The UN's media grappled with a similar paradox.

As Mark Alleyne (2003) notes, public information was one of the UN's major enterprises and media became one of the central means by which the agency publicized its work in the decade following the Second World War. At base, the UN was an organization dedicated to political neutrality, orientated around the pragmatic goal of using information to change the future. Not only was it committed to opening up borders to the «free flow of information» as mandated by the United States, but all of its agencies established information offices, making public relations one of the UN's key operations (Wagman, 2016). The emphasis on education as technique, which played such a central role at UNESCO, also highlights the ascendancy both of sociobiology and social psychology, disciplines that emphasized the environmental causes of human behaviour and were closely connected to the emergence of American communications research on propaganda (Haraway, 1991; Alleyne, 2003; Peters & Peters, 2016; Rose, 2010). This kind of education took place in all forms of the agency's media that were circulated to schools, part of what Donna Haraway (1988) has identified as the therapeutic understanding of communication in the post-war agency (see also Selcer, 2009). By this logic, good communication was the best route to healthy and productive social relations. Thus, as in cybernetics, the communication of information became the operative level at which to accomplish the agency's social and political goals.

This focus on educationalization was bolstered by a vision of the technologized classroom, advocated by behavioural psychologists such as B.F. Skinner. In a cybernetic vein, Skinner proposed that the system of interactive teaching machines — so-called «programmed learning» — would make education more economical and effective:

There are more people in the world than ever before, and a far greater part of them want an education. The demand cannot be met simply by building more schools and training more teachers. Education must become more efficient. To this end, curricula must be revised and simplified, and textbooks and classroom techniques improved. In any other field a demand for increased production would have led at once to the invention of laborsaving capital equipment. Education has reached this stage very late, possibly through a misconception of its task. Thanks to the advent of television, however, the so-called audio-visual aids are being re-examined. Film projectors, television sets, phonographs, and tape recorders are finding their way into American schools and colleges (1960b, p. 137).

In the 1950s these influential ideas about the role of technology in education were at the center of the cybernetic stream of pedagogical thought (Lange, 1967).

Skinner proposed that learning could be reconsidered as a feedback loop consisting of stimulus, response, and reinforcement that reconfigured learning as a kind of performance measurement and removed it from the affective dimension of fear and anxiety that could accompany traditional classroom learning and that, in his view, eroded the teacher's ability to cover curriculum. As Skinner and his followers were at pains to point out, in the realm of learning, species made little difference: «comparable results have been obtained with pigeons, rats, dogs, monkeys, human children and ... human psychotic subjects» (1960a, p. 103). Not only are the processes of «perception» and «thinking» modifiable behaviours like any other,

but teaching machines are positioned as both more responsive to individual student needs – allowing pupils to work at their own pace, for example – and also as more egalitarian in outlook: «A machine develops no likes or dislikes. It has equal patience for the slow and the quick. It does not discriminate between rich and poor. It makes no distinctions with regard to race, color, or creed» (Blyth, 1960, p. 415). Since cybernetic or black box models of the subject such as these make no distinction between species or context, behaviorists were able to treat the technologized classroom as no different to the technologized workplace or home (Skinner, 1960a). Most importantly, perhaps, was the scaling that educational technologies allowed for in a postwar expansion of education where there was a shortage of qualified teachers and suitable teaching materials. Technology itself could take the place of social context, levelling the playing field and homogenizing student experience.

In light of Skinner's statements, one can see postwar educational media as themselves situated as part of a cybernetic imaginary. After the war, ideas about psychological training that had been applied to soldiers found wide favour in educational policy in the United States and elsewhere. As expressed by behaviourists, machines were seen to be compatible, and even preferable, partners in the democratization of education. And versions of these ideas were rapidly absorbed into postwar international development discourse as well (Schramm, 1964). The implications for a humanist vision of education in this progression away from teacher and toward machine was as significant as Ellul had predicted, for the corollary of programmed instruction was a programmable student, with all that was implied for democratic societies.

How did cybernetics enter into the operation of the United Nations? In many ways, Foucault's analysis of governmentality – building from Roland Barthes' diagnosis of the incursion of technocracy into French society – emerged from and was based on the postwar reframing of political issues such as «welfare, economic performance and security» into depoliticized techniques (McKinlay & Taylor, 2014, p. 3) and this applies *a fortiori* to the UN, an agency whose technobiological aim was to operationalize the goal of world peace. In the interests of expediency, and most likely also due to its reliance upon American funding and experts, under the guise of democracy and fundamental education, UN agencies such as UNESCO adopted the instrumental – and governmental – theory of teaching machines for their educational work, particularly in the global South (see Druick, 2011b; Druick, 2020b)². It bears noting that although cybernetic theories were in ascendance they were applied to

² In myriad UNESCO publications and conferences of the 1950s, the humanist ideals of peace and freedom are translated into matters of technique (Druick, 2011b). Film in particular, as technologically mediated communication that could be incorporated into cybernetic circuits, was adopted by UNESCO for its educational goals. Connected with behaviourist theories of education that dominated American psychology, UNESCO's work with film and later television, especially in the so-called «third world» mapped a project of centralization and standardization onto the project of liberal education that dominated modernization theory for the better part of two decades (Druick, 2011b; Schramm, 1964; Schramm, 1967; Schramm, Coombs, Kahnert & Lyle, 1967). Cybernetic ideas circulated amongst prominent social scientists. European academics who sought refuge in the US during the war, including post-structuralists such as Claude Lévi-Strauss and Roman Jakobson, became caught up in the depoliticized – and highly funded – discourse of cybernetics. Despite the initial Soviet characterization of cybernetics as apolitical and technocratic, eventually a strand of Soviet cybernetic thinking would also emerge (Bowker, 1993; Rindzeviciute, 2016).

education in a differential manner, most intensively found in the technologization of neo-colonial and working-class settings (Goldfarb, 2002).

The tension produced by filtering a humanist mandate through technobiological mechanisms can also be seen in films produced by the United Nations itself. In the immediate postwar period, Jean Benoît-Lévy, director of the Film and Visual Information division of the UN, commissioned a series of educational films to be used internationally in school settings (Langlois, 2016). Meant to illustrate the «basic and universal» projects of the UN's Permanent Commission on Social Questions, the topics included childhood, hunger, public health, environmental concerns, illiteracy, peace and economic development (Vichi, 2002, p. 131). Henri Storck, one of Belgium's most prominent documentary-makers, was commissioned to adapt a 1947 UN report on juvenile delinquency. In the following section, I focus on the resulting 25-minute film, *Au carrefour de la vie* (1949), which shows the normalization of mental health and biopolitics as dominant discourses of the postwar period. Using semi-documentary dramatized reenactment, the film follows the tribulations of a number of children who have turned toward delinquency. In the vein of much mental health filmmaking of the period, the children are shown in institutions, working with psychologists and other health care professionals, hooked up to diagnostic machines, and exploring their feelings with creative therapies. The film therefore serves as a telling example of «operational media» at this transitional point in international educational theory and practice.

3. *Au Carrefour de la Vie* (1949)

Due to its progressive policy in the area, Belgium was chosen among member states to make a film about delinquency. A law introduced in 1912 adopted a holistic approach to the topic of delinquency, setting up the first juvenile court and allowing the state to remove children from abusive family situations. Harsh punishment was replaced by the installation of disciplinary experts who would re-educate children and their families. The country's progressive observation centres were proudly used as locations for the film (Vichi, 2002). Storck was instructed by the Belgian UN committee to base the film on a 1947 report by Jean Hoffmann entitled *Juvenile Delinquency: World Problem* (now lost). Hoffmann postulated — and Storck agreed — that delinquency derived from the isolation of children structured into capitalism (Vichi, 2002). While the film highlights Belgium's progressive system of institutions linked to child psychology, it also emphasizes juvenile delinquency as an international issue that can be overcome through collaboration.

One of the most striking things about *Carrefour* is its deployment of psychology as a crucial site of the operation of modern subjectivity. The narrator (renowned French actor Jean Davy) asserts a point shown throughout the film: parents are usually to blame for their children's delinquency. The script presents a set of intertwined mini-narratives about troubled children, both actors and non-actors, as they are brought into contact with state agencies after they have run away from home, acted violently, or destroyed property. Stories of two adolescents, Justin and Jeanne, and their home situations feature more prominently than the rest. Justin runs away from a stifling domestic situation with an unloving step-father — as we are informed by the voice-

over narrator – stealing some money and his mother’s ring before he goes. Scenes of his freedom, exploring the docks and beaches, is accompanied by cheerful music. Finally, on a remote beach he is apprehended by police at the ocean’s edge, in a scene which is impossible not to see in retrospect as prefiguring the ending of Francois Truffaut’s *The 400 Blows* made a decade later³. Justin is brought to a detention centre where we see a number of children undergoing diagnostic tests, as well as engaging in therapies⁴. On his first night in the observation centre, he has a nightmare in which he finds himself in a courtroom addressing a panel of judges who expose him as a «natural child» e.g. one whose parents were unmarried. As the word «bastard» echoes in his ears, he looks around the courtroom at the lawyers, on-lookers, and his mother, and confesses on the soundtrack that he is overwhelmed with shame. The institution, run on scientific principles, does not in fact apply the moral judgement he fears and, after therapeutic treatments, he is eventually reunited with his parents with hope for a new family equilibrium.

Figure 1. As a nouvelle vague film, Truffaut’s *400 Blows* (1959) ends where Storck’s *Au Carrefour de la vie* (1947) begins, i.e. before the process of juvenile reform.



³ While I have not been able to definitively ascertain that Truffaut saw *Carrefour*, through Storck and Truffaut’s mutual friendship with André Bazin, it is highly likely.

⁴ In this regard the film is similar to the pattern evolved in relation to the normalization of treatments that emerged during and immediately after the war in films such as *Neuro-Psychiatry 1943* (1943), produced by Basil Wright for the British Ministry of Information that depicts war veterans at the Mill House clinic in north London; John Huston’s suppressed *Let there be light* (1946) and its anodyne replacement *Shades of Gray* (1948); and the National Film Board of Canada’s *Mental Mechanisms* series (1947-51; see Druick, 2020a).

Figure 2. Opening scene from *Au Carrefour de la vie*. Justin is apprehended at the ocean's edge, triggering the process of institutional reform.



Jeanne, a teenaged girl from a large and impoverished family is institutionalized for her violent, anti-social behaviour. She is placed in a girls' reformatory, where she is unable to fit in, and then into a loving foster home where she thrives. Flashbacks show Jeanne's over-strict father turning her out of the house while her mother is visually submerged by numerous younger siblings. The lack of parental love and care leads to a series of criminal behaviours, including stealing and, it is implied, survival sex work. She has cathected with a doll, her only possession. When it is stolen by other girls at the reformatory in a gothic scene full of long shadows and a mocking lullaby sung by the chorus of fellow-inmates, she lashes out at the kind head mistress. The educator understands the source of Jeanne's emotions and consults with a psychiatrist to learn more about how to help the girl. Over time, the judge assigned to her case determines that she should not return to her family home and instead places her in a foster home where, in an emotional scene, she is shown giving her doll to her new little sister. Both stories demonstrate the family as a hinge between individual and society. Where there are breakdowns in the family, the child will not develop normally without the intervention of disciplinary state agencies (Foucault, 2003).

Figure 3. Caption: Jeanne undergoes therapy.

Storck opts to begin with stories of the children running away or being brought to the institutions, providing us their back stories in compressed flashbacks. This serves to make their flight and capture all the more melodramatic, highlighting the missed opportunities and structural injustices intrinsic to the form (Berlant, 2011; Elsaesser, 1991). The music, composed by the Belgian modernist Raymond Chevreuille who had scored Storck's previous film on Reubens, adds substantially to the melodrama, highlighting the emotional aspect of the children's experiences. The scenes of reconciliation in particular are highly affecting. The film is representative of some of the sonic experiments going on in liberal internationalist documentaries of this sort in the mid- to late-1940s, which frequently used multiple voice-overs (Druick, 2011a). While there is typically a main male narrator, other voices are used to bring different points of view or to connect viewers to characters' inner worlds. In addition to the principal voice-over narrator, *Carrefour* deploys four different voice-overs, including a female psychiatrist, a mother and two of the children.

Other children without elaborated back-stories are shown as more black box-like, without the rich inner life and complex of psychological conditions, presenting to judges, engaging in tests and therapies and adapting themselves to the disciplinary institution. The film uses a mix of melodramatic and utility-descriptive modes to depict the disciplinary mechanisms of the state according to an early 20th century paradigm of

social psychology. In certain ways the film – and the larger series of which it is a part – marks a transitional approach, deploying an operational form of media inspired by the postwar strategy of mediated education to bring about particular aims off-set with the representation – at times poetic – of a humanistic vision of psychological normalization. The treatment of «delinquent» children is intercut with training of medical professionals and meetings between doctors, social workers and parents, revealing a tapestry of disciplinary and biopolitical forces. The film ends up emphasizing the vibrancy and resiliency of childhood, not unlike the strategy used in numerous Italian neorealist films of the same period, with a long low-angle final shot of boys framed against a clear sky running toward and around the camera. However, the humanist themes do not obviate the film's emphasis throughout on operationality, underscored by Davy's insistence in the final seconds on the quest for international cooperation on the issue.

The film is dedicated in voice-over to the delinquent children of all nations devastated by war. This dedication is all that is left of Storck's original conception to draw the connections between delinquency and the trauma of war directly, a criminality brought on by experiences of displacement, forced prostitution and the death of close family members⁵. Similar to *Children of Europe* (Seymour, 1949) and other UN/UNESCO postwar projects that aimed to show Europe rebuilding from the ashes of war, *Au Carrefour de la vie* articulates youth delinquency in relation to the social breakdown produced by global conflict, although this is largely submerged in the text, as well as to the international modernization of mental health regimes. Instead, the film focuses on the more politically neutral emphasis on the human mind as a machine attempting to contain its primitive urges and attain equilibrium in the stressful conditions of modern life; mental health is presented as a problem to be managed by new techniques. The ascendancy of these ideas to common sense was one way that governmental logics insinuated themselves into everyday practices such as child rearing, combining social and biological forms of citizenship, and making the family an indispensable hinge between the individual and the population.

⁵ *Children of Europe*, a 1949 UNESCO photography book also emphasizes the theme of reconstruction through the much more explicit deployment of the figure of the deprived and criminalized child (Seymour, 1949). Based on social psychology of the day which saw individuals as shaped by environments and cultural contexts, *Children of Europe* uses the trope of the delinquent child to indicate the ravages of war on a society's moral structure. Children in wartime, many orphaned, are shown to have lost connection to social norms, and resorting to criminal activities, such as prostitution and theft, in order to survive.

Figure 4. Final shot of *Au Carrefour de la vie* of boys running outside strikes a hopeful humanist tone, much like an Italian neo-realist film.



The normative discourse of delinquency is closely tied to the modern liberal conception of citizenship. *Carrefour* is consistent with the drive of international agencies since the late 19th century to understand and reform delinquency in order to forge successful citizenship (Mattelart, 1994). The film tells a biopolitical story of the operation of state power at the level of the individual child, and puts mental and physical health at the very centre of that operation. In the emphasis on disciplinary institutions and a medico-legal-pedagogical *dispositif* built up around the delinquent child, the film highlights Foucault's analysis of the normative powers of education and its close connection to the psy-disciplines – psychology, psychiatry, social work – in the formation of modern subjectivity (Foucault, 2003). It also emphasizes the connection of each individual to the successful operation of the social totality, like information flows within a homeostatic system.

In a 1947 report on criminality, the United Nations economic and social council emphasizes the cybernetic vision of a social body that requires a «rational organization» against crime in order to protect itself. The «problem of delinquent children has become particularly acute since the war. ... The treatment of the delinquent child, more victim than offender, is deserving of special attention» (United Nations Economic and Social Council, 1947, p. 4). Marking a shift to new forms

of discipline, the report suggests that medico-pedagogic methods should replace punitive ones when dealing with delinquents. The war is identified as having generated the child delinquents who may become adolescent offenders and later professional criminals (p. 7). The children are thus identified as black boxes whose future behavior may be modified by correct inputs to create homeostasis or balance within the social system. This vision of the delinquent also resonates with Foucault's description of the «medico-legal surveillance surrounding childhood, youth, young people in danger» (2003, p. 40). Indeed, Foucault's vision of the norm as a rule of conduct, is not unlike the first-wave cybernetic assumption of the tendency of systems toward homeostasis and away from disorder. Just as educationalization operates to create the imagined future citizen, the treatment of the delinquent child operates as a story about normative social futures. *Au Carrefour* thus implicitly links psychological normalization with the hope for societies aspiring to homeostasis after the war (Hayles, 1999).

Au Carrefour is a piece of operational media insofar as it bases itself on social scientific and legal studies of children at odds with families and the law and attempts to normalize a set of technobiological practices and processes associated with the remedying of delinquent subjects in the UN's member states. However, with its emphasis on melodramatic storytelling, it is also in part a humanist film. I posit that the film reflects a compelling contradiction not uncommon in educational media of this period, between humanist developmental thinking and cybernetic or systems operationalization.

4. Operational media: discussion and conclusions

Anna McCarthy has noted that in the postwar period, citizenship began to be seen as a developmental discourse leading from irrational childlike behaviours to «the constitution of a rational, moderate, and self-managing» subject (2010, p. 21). This observation can be reframed in terms of the creation of an operational subject, in the cybernetic sense. As is evident in *Au Carrefour*, citizenship in this period is presented as normative and aspirational. Mental health is constituted as an essential aspect of the on-going moral development of citizens, one that included the work of parents, teachers, social workers, doctors, nurses and numerous other governmental agents to achieve homeostasis. After the war, psychological discourses became increasingly popular, helped in no small part by the military, which used a pragmatic and behaviourist psychology to help treat and normalize civilian soldiers' traumatic experiences (Scott, 2018).

If, as Miller and Rose (1994) suggest, the autonomy and responsibility of postwar citizenship assumes a «psychological shape» in this period, it bears reflection that the perpetual intervention so essential to governmental relations can best occur when the citizen's neuroses and psychoses are maintained and managed, rather than eliminated altogether. Recall Skinner's proposition that teaching machines could be used on psychotic and non-psychotic individuals alike. Similarly, Wiener includes a prolonged discussion of psychotic subjects in *Cybernetics* (2019, chapter 7). Emerging from the wartime analysis of soldiers with post-traumatic conditions, the category of psychosis had become more normalized and placed on a continuum with

neurosis. Engin Isin has coined the term «neurotic citizen» to describe someone who paradoxically attains a requisite level of self-responsibilization through the perpetual seeking of expert help (2004). The linking of citizenship to subjectivity in this way, produces the citizen who is interpellated and governed precisely at the location of the treatment of their symptoms (see also Druick, 2020a). Cybernetic models in the postwar period made such a vision of subjectivity inevitable across a range of educational discourses and media. Indeed, it may be argued that educationalization and the deployment of media go hand in hand. In any event, by the mid-20th century, media were essential operational features of the citizenship work of international organizations (Brendebach, Herzer & Tworek, 2018).

I have considered *Au Carrefour de la vie* in terms of its representational strategies and operational logistics. Indeed, what I'm proposing here is that we may consider it part of a strategy to turn educational film into operational technique. The stated goals of the UN were global peace and universal human rights, but compelling insights may be drawn from the ways in which those ideas were operationalized, such as the kinds of media projects the agency helped to produce, how they circulated and where they were exhibited – information that is unfortunately scarce on *Au carrefour*.

On a basic level, the operation being promoted in *Au Carrefour de la vie* is the biopolitical correction of abnormal behaviour of future citizens through the mechanisms of technologized behavioural sciences, primarily psy-disciplines. But on another level this mechanism is directly related to the cybernetic logics of postwar mass education, policies established in no small part to normalize youth traumatized by war and acclimatize them to the working world (United Nations economic and social council, 1947). Psy-disciplines and the newly emerging discipline of sociobiology worked hand in hand with modern education to regulate what was seen as «negative feedback» and create stable homeostatic social systems (Haraway, 1988; Haraway, 1991). In this regard, postwar educational methods dovetail with military and industrial research in a world «become laboratory» (Bowker, 1993, p. 123). The political and cultural world conceived as a «vast communicational process» (Wiener, as cited in Lafontaine, 2007, p. 31) was, in many ways, an apolitical response to fascism. The United Nations was a crucial player in the postwar mediation of humanism and cybernetics that attempted to turn the fight against violence and injustice into something purely operational. The tension between these approaches is manifest in the operational and biopolitical logistics of the UN's educational media, themselves a form of teaching machine. The pedagogical goals of creating citizens of democracies capable of «agency, consciousness and autonomy» are in this sense paradoxically enacted through the more ambiguous post-humanist concepts of «circuits, cognition, and automata» precisely Ellul's dystopian vision of «joyful serfdom».

While tempting to assess the film work of the nascent UN as part of the agency's failure narrative – failure to reconcile its utopian ideals with the political economies of the postwar world – a more compelling project for archaeologists of media education might be to juxtapose the ideology with its operationalization. At that level, the agency's contradictions become readily apparent and available for interpretation, its ever-shifting remit overlapping with a variety of political economic projects, both utopian and pragmatic. By considering the agency's educational film work as a means of operationalizing the biopolitical at the level of transnational populations

– and not just through the more palatable liberal imaginary of a global public – we can potentially bring it into some wider discussions about mid-century educational cinema’s cybernetic orientation. In so doing, media’s centrality to modern education and citizenship may also be more clearly brought into view.

5. References

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